Z.ONE

Z.ONE ULTRASOUND SYSTEM : 2.0

SERVICE MANUAL

BREAK THROUGH THE SOUND BARRIER.

ZONARE

REVISION HISTORY		
REV	**DESCRIPTION**	**DATE**
A	Initial Release of Version 2.0 Product, Service Manual	8/06

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1 INTRODUCTION

ZONARE Medical Systems, Inc.

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Tech Support fax line 1-650-230-2817

Customer Support E-Mail: ..... techsupport@zonare.com or salessupport@zonare.com

Web site ..... www.zonare.com

FTP site (Service) ftp://12.40.200.87

1.1 Purpose

This manual's purpose is to provide information to assist service personnel in performing the service, maintenance, and repair procedures that may be required to support ZONARE's **z.one** Diagnostic Ultrasound System product.

1.2 Product Overview

ZONARE's **z.one** Diagnostic Ultrasound System provides a combination of a full-featured, cart-based ultrasound system, with the versatility of a compact, easily transportable to the patient, self-contained portable unit.

The **z.one** Ultrasound System is offered in two different models, utilizing two different configurations of Carts. The sub-systems that comprise the **z.one** product are listed below:

- Full-Feature **SuperCart** or lightweight ***mini*Cart**
- Portable "**Scan Engine**" (***Ultra* - 2.0**)
- Ultrasound transducer(s)

The portable **Scan Engine** consists of a limited number of field replaceable units (FRU's). The FRU's for this unit are:

- Lithium-Ion battery pack

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- USB Memory Stick
- Scan Engine (complete)

The **SuperCart** consists of a limited number of field replaceable units (FRU's). The FRU's for this unit are:

- Assy, Main board/IO board
- Assy, User Interface
- DC Power Supply
- AC Power Board
- LCD Display

The ***mini*Cart** consists of a limited number of field replaceable units (FRU's). The FRU's for this unit are:

- AC Fuses
- Main Power Supply (DC)
- USB Hub
- LCD Display
- Remote Keyboard
- Wheels

The ultrasound transducers are replaced as a single FRU, with no field-serviceable parts.

1.3 Product Features

The **z.one** ultrasound system includes the following key features:

- Full function scanning modalities (B-Scan, M-Mode, Color Flow, Power Doppler, PW Dopper)
- Remote portability for patient scanning

1.4 Definitions/Acronyms

2D: ..... Two dimensional (B-Mode, Color mode)

BMP: ..... **B**it **M**a**P**

C: ..... **C**olor Flow Mode (Doppler)

DICOM: ..... **D**igital **I**maging and **CO**mmunication in **M**edicine

DSP:..... **D**igital **S**ignal **P**rocessing

ESD:..... **E**lectro **S**tatic **D**ischarge

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EV:..... **E**ndo **V**aginal

FPGA: ..... **F**ield **P**rogrammable **G**ate **A**rray

FRU: ..... **F**ield **R**eplaceable **U**nit

HSSL: ..... **H**igh **S**peed **S**erial **L**ink

LCD:..... **L**iquid **C**rystal **D**isplay

LED: ..... **L**ight **E**mitting **D**iode

M:..... **M**-Mode (Motion Mode - Tissue)

NTSC:..... **N**ational **T**elevision **S**tandards **C**ommittee (video standard)

PAL: ..... **P**hase **A**lternation by **L**ine (video standard)

PRF:..... **P**ulse **R**epetition **F**requency

PW:..... **P**ulsed **W**ave Mode (Doppler)

Retrospective:.. Post-processing performed on frozen images from memory

SVGA: ..... **S**uper **V**ideo **G**raphics **A**rray

TGC:..... **T**ime **G**ain **C**ompensation

USB:..... **U**niversal **S**erial **B**us

VKB:..... **V**irtual **K**ey**B**oard

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1.5 Documentation Conventions

This following alert conventions are used in this manual:

1.5.1 Alert Messages

1. A **WARNING** indicates that **PERSONAL INJURY OR DEATH** may occur to patient and/or user if the user does not observe the provided information.

WARNING

2. A **CAUTION** indicates that **DAMAGE TO EQUIPMENT** may occur if the user does not observe the provided information.

CAUTION

3. A **PRECAUTION** indicates that **INCONVENIENCE TO THE USER** (such as loss of text entries or saved settings) may result if the user does not observe the provided information.

PRECAUTION

4. Common terms that have a special meaning for the **z.one** (*e.g.* **Menu Control** or Trackball) are capitalized to distinguish their special usage (as opposed to a person who does navigation).

5. Control and function names (*e.g.* Print Button, Image Display) are capitalized for recognition.

6. Items to be acted upon are underlined (e.g. press the Store Button). Items needing emphasis are in boldface type.

1.5.2 Symbols

The following symbol conventions are used in this manual, and/or on the **z.one** product:

This symbol is used to draw attention to information that may relate to safety of the patient, the operator, or the equipment.

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Caution: ESD sensitive

This symbol indicates that the equipment <u>is not</u> Category AP, and therefore must not be used in the presence of flammable liquids or gasses.

.

Type BF patient applied part (B= body, F= floating applied part).

This symbol indicates that the equipment does not utilize a floating double insulated isolation connection, and therefore must not be connected to external equipment that is not protectively earthed (DO NOT connect to class II equipment).

Storage/Operating Temperature conditions

Alternating Current (AC)

Direct Current (DC)

Date of manufacture

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2 SAFETY

It is extremely important to read the following definitions of WARNING information, prior to beginning any service on any sub-system within the **z.one** product. As you see applicability of each of these noted WARNINGs, during the course of the servicing process, be prepared to avoid harm to persons and equipment by proper adherence.

2.1 WARNINGs During Service/Operation

WARNING

To prevent possible damage to the electronics of the system from condensation, the following warning must be observed:

*Anytime the **z.one** (Scan Engine, SuperCart or minCart) is being moved from an environment that differs greatly in temperature and/or humidity, from the environment where it has been moved for intended operation, (as a result of shipping or transport) the unit should be allowed to stand for a period of no less than 30 minutes, prior to inserting battery or powering on.*

WARNING

*Inspect all cables and power cords **BEFORE** powering-on the **z.one** system; or connecting the transducer. Do not use the system if visual signs of external damage are observed.*

WARNING

*To achieve proper grounding reliability, the **z.one** SuperCart or miniCart power plug must be fully inserted into a receptacle marked 'Hospital Grade". Do not remove the grounding wire. If there is any question of power outlet or power cord integrity, do not proceed. Obtain qualified technical assistance.*

WARNING

*The ZONARE **z.one** contains no operator-serviceable components within the enclosures. To avoid electrical shock, the no covers should be removed except by ZONARE factory trained personnel. Failure to do so may void the system warranty or service contract coverage Warnings.*

WARNING

*Do not operate the **z.one** system in the presence of flammable anesthetics or in a room recently washed with flammable cleaning and disinfecting agents. Cleaners can produce explosive vapors. Check labels of original containers of cleaners and disinfectants for warnings about vapors. Thoroughly ventilate the room, if such vapors may potentially be present, prior to activating any of the **z.one** components.*

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2.2 Battery WARNINGs

WARNINGS.

- *The battery has a safe smart device. Do not disassemble or alter the battery in any way.*
- *Charge the battery at room temperature.*
- *Do not short-circuit battery by directly connecting the positive and negative terminals with metal objects.*

- *Do not heat or discard battery in a fire.*
- *Do not expose the battery to temperatures above 150 degree F.*
- *Do not charge the battery near a heat source*
- *Do not leave battery in direct sunlight*
- *Recharge battery only using Scan Engine in a docked condition in **z.one** SuperCar or miniCartt, or remotely using ZONARE Z.ONE battery charger.*
- *Do not use a damaged battery.*
- *Inspect the battery for damage before charging or placing the battery in the **z.one**.*
- *Do not connect battery to an electrical power outlet.*
- Do not continue to recharge the battery if it does not recharge fully after 4 hours
- Battery **MUST** be **REMOVED** from Scan Engine, during shipping/transport of the **z.one**

2.3 CAUTIONs During Service

CAUTIONS

- *Apply proper line voltage. Verify that the **z.one** system is compatible to match the AC voltage of site receptacle. Also verify that all plugs match the receptacle type. Mismatched voltage or plug configuration can damage system components.*
- *Protect the system from water or other liquids that could drip into the electronic components.*
- *Do not drop the transducer(s), or allow them to impact any hard surfaces.*
- *Perform no unauthorized modification to any of the **z.one** sub-systems. Unauthorized modification can introduce additional hazards to the product.*

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2.4 Battery CAUTIONs

CAUTIONS

- *To protect the battery from potential thermal damage, the system monitors the temperature of the battery at all times. If the battery is detected as exceeding the maximum safe operating temperature, a warning message will appear on the display of the* ***z.one****.*
- *To prevent possible damage to the unit, the battery should be REMOVED from the Scan Engine prior to transport or shipment.*
- *Do not immerse battery in water or allow it to get wet.*
- *Do not put the battery into a microwave oven or pressurized container.*
- *Use only batteries provided by ZONARE*
- *Store the battery between* -20 to 60° Celsius (-4° to 158° F).
- *If the battery leaks, emits orders, emits heat, is deformed or discolored in any way immediately remove it and stop using it.*

2.5 USB Memory Stick CAUTIONs

CAUTIONS

- *To prevent possible loss of patient image data or corruption to the removable USB Memory Stick, should only be inserted or removed from the Scan Engine while the* ***z.one*** *is in a powered OFF state.*

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3 SYSTEM SPECIFICATIONS

This section contains **z.one** system and accessory specifications. For information on the specifications for ZONARE authorized peripherals, refer to the manufacturers' documentation.

3.1 System Dimensions

SuperCart (with Scan Engine installed)

- Height:

  - Max operational: 141 cm (55.6 in)

  - Min operational: 129 cm (50.6 in)

  - Display lowered for transport: 104 cm (41.1 in)

- Width: 61 cm (24.2 in)
- Depth: 85 cm (33.6 in)
- Weight: 82 kg (180 lb)

***mini*Cart (with Scan Engine installed)**

- Height:

  - Max operational: 160 cm (63 in)

  - Min operational: 134 cm (53 in)

  - Display lowered for transport: 104 cm (41.5 in.)

- Width: 57.2 cm (22.5 in)
- Depth: 56.1 cm (22.0 in)
- Weight: 55 kg (132 lbs.)

Scan Engine

- Height: 7.3 cm (2.9 in)
- Width: 18.7 cm (7.4 in)
- Depth: 25 cm (9.8 in)
- Weight: 2.5 kg (5.6 lb) – with battery, no probe

3.2 Displays

SuperCart

- 13" high resolution color LCD display
- 640x480 display format

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- 0.41 mm pixel pitch
- Viewing angle (H/V): 170 degrees typical
- Minimum 10:1 contrast
- +/- 90^{o} rotation
- 30^{o} backward tilt
- Full 90^{o} forward tilt into secure transport position
- Integrated Brightness/Contrast controls
- Advanced setup parameters via on-screen menu

***mini*Cart**

- 13” high resolution color LCD display
- 640x480 display format
- 0.41 mm pixel pitch
- Viewing angle (H/V): 170 degrees typical
- Minimum 10:1 contrast
- +/- 90^{o} rotation
- 30^{o} backward tilt
- Full 90^{o} forward tilt into secure transport position

Scan Engine

- 5.8” high resolution color LCD display
- 800x480 display format
- 0.16 mm pitch
- Brightness and Contrast controls

3.3 Image Storage

Internal:

512MB Internal CompactFlash Memory (Standard)

- DICOM uncompressed: 1280 images
- DICOM RLE: 4060 images
- BMP: 1700 images

2GB Internal CompactFlash Memory (Option)

- DICOM uncompressed: 5000 images
- DICOM RLE: 15,900 images
- BMP: 6650 images

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3.4 Transducers

C5-2 Convex

- Primary Applications: Abdominal, OB/GYN
- Secondary Applications: Vascular,
- Bandwidth: 2-5MHz
- Number of Elements: 128
- Physical footprint: 20 x 64mm
- Convex Radius: 50mm
- Field of View: 65 degrees
- Harmonic Transmit Frequency: 3.0 and 4.0 MHz
- Biopsy Guide: Option

L10-5 Linear

- Primary Applications: Vascular, Small Parts, Breast
- Secondary Applications: OB/GYN, Pediatric, Intraoperative
- Bandwidth: 5-10MHz
- Number of Elements: 128
- Physical footprint: 11 x 43mm
- Field of View: 38mm
- Biopsy Guide: Option

L8-3 Linear

- Primary Applications: Peripheral Vascular
- Secondary Applications: Pediatric Hips, Difficult Small Parts
- Bandwidth: 3-8MHz
- Number of Elements: 128
- Physical footprint: 12 x 43mm
- Field of View: 38mm
- Biopsy Guide: Option

E9-4 Transvaginal

- Primary Applications: OB/GYN
- Bandwidth: 4-9MHz
- Number of Elements: 128
- Physical footprint: 20 x 26mm
- Convex Radius: 11.5mm
- Field of View: 135 degrees
- Biopsy Guide: Option (disposable)

P4-1 Phased

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- Primary Applications: Deep Abdominal, Abdominal Vascular, Trauma
- Secondary Applications: Obstetrics, Fetal Heart, Gynecology
- Bandwidth: 1-4MHz
- Number of Elements: 128
- Physical footprint: 16 x 31mm
- Field of View: 90 degrees
- Biopsy Guide: **Option* **(to be released)*

P10-4 Phased

- Primary Applications: Neonatal, Pediatric Head/Abdomen
- Secondary Applications: Vascular, Intraoperative
- Bandwidth: 4-10MHz
- Number of Elements: 128
- Physical footprint: 11 x 18mm
- Field of View: 90 degrees
- Biopsy Guide: **Option* **(to be released)*

3.5 Accessories

- 2-Bay Battery Charger
- AC Power Adapter
- USB Memory Stick

3.6 Peripherals

SuperCart:

- Sony UP-897MD B/W Video Printer
- Sony UP-21MD, Color Video Printer
- Panasonic LQ-MD800, DVD Recorder

***mini*Cart**:

- Sony UP-D897 Digital B/W Printer

3.7 Imaging Modalities

B-Mode

Live B-Mode (Only) Controls

- Depth – up to 30cm
- Frequency
- Tissue Harmonics

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- Acoustic Zoom
- Acoustic Output
- **DUAL** imaging mode

Live & Retrospective Imaging Controls

- Gain
- TGC
- Grayscale Map
- Dynamic Range
- Persistence
- Up/Down Invert
- Left/Right Invert
- Edge Enhance

M-Mode

Live M-Mode (Only) Controls

- Depth – up to 30cm
- Frequency
- Tissue Harmonics
- Cursor Position
- Acoustic Zoom
- Acoustic Output

Live & Retrospective Imaging Controls

- Gain
- TGC
- Sweep Speed
- Display Format (Two B reference image sizes and full screen strip)
- M Map
- M Dynamic Range
- Persistence
- Up/Down Invert
- Left/Right Invert
- Edge Enhancement

Color Doppler

Live CD (Only) Controls

- ROI Position
- ROI Size – up to full screen
- Velocity Scale
- Wall Filter
- Steering Angle

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- Acoustic Zoom
- Acoustic Output
- **DUAL** imaging mode

Live & Retrospective Imaging Controls

- Gain
- Color Map
- Baseline Shift
- Invert
- Persistence

Power Doppler

Live PD (Only) Controls

- ROI Position
- ROI Size – up to full screen
- Velocity Scale
- Wall Filter
- Steering Angle
- Acoustic Zoom
- Acoustic Output
- **DUAL** imaging mode

Live & Retrospective Imaging Controls

- Gain
- Power Doppler Map
- Persistence

PW (Pulsed Wave) Doppler

Live PW (Only) Controls

- Cursor Position
- Gate Size
- Steering Angle
- Velocity Scale
- Update
- Acoustic Zoom
- Acoustic Power

Live & Retrospective Imaging Controls

- Gain
- Angle Correct – manual
- Angle Correct – ‘Quick 60’
- Baseline Shift

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- Wall Filter
- Invert
- Display Format (Two B reference image sizes and full screen strip)
- Sweep Speed
- PW Map
- PW Dynamic Range
- Audio Volume

Imaging Mode Combinations

- B+CD/PD
- B+M
- B+PW (real-time duplex)
- B+CD/PD+PW (real-time Triplex)
- **DUAL** (side-by-side imaging)
- Acoustic zoom in all imaging modes

Imaging Formats

- Convex
- Linear
- Micro-convex
- Phased Array

3.8 Site Requirements

Power

- 100 – 120VAC, 50-60Hz or 200 – 240VAC, 50-60Hz (Factory Configurable)

Environmental

- Cooling consistent with 1024 BTU / hour system output (Scan Engine + SuperCart/*mini*Cart)
- Ambient air temperature of 0^{o} – 35^{o} Celsius (32^{o} - 95^{o} F)
- Ambient relative humidity of up to 80%, non-condensing

3.9 System Power

- Factory Configurable Input Voltage:
  - 100 – 120V @ 6A (max)
  - 200 – 240V @3A (max)
- Line Frequency: 50 – 60Hz

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- Power for peripherals: 300W

3.10 System Power Protection

- **SuperCart**
  - Re-settable AC circuit breaker
- ***mini*Cart**
  - User-replaceable fuses:
    - T6.3A/250V ..... (100-120V Systems)
    - T3.15A/250V ..... (200-240V Systems)

3.11 Electrical Specifications

DC Voltages:

- **SuperCart DC Power Supplies**

Voltage	Purpose	Max Current Rating
+12V	SuperCart Main Logic / Scan Engine Power	20 A
+12V	LCD Display Source Power	6 A
+5V	SuperCart +5V Logic Power	8 A

- ***mini*Cart DC Power Supplies**

Voltage	Purpose	Max Current Rating
+12V	Scan Engine Power	20 A
+12V	LCD Display Source Power	6 A
+5V	USB Hub Power	8 A

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- **Scan Engine Power Board DC Supplies**

Voltage	Purpose	Total Current
+1.2V	DSP Power	2.3 A
+1.5V	Digital FPGA (Digital Board)	11.2 A
	Striker (Analog Board)	
+1.8V	FPGA busses	7.4 A
	ADC's	
	ADC's and AFE's	
+2.5V	DDR SDRAM	0.30 A
+3.3V	CPU, FPGA's, etc.	2.5 A
Vfan	Cooling fans	0.25A
+5.0V	Power Supply monitoring	10 mA
	Levels shifters, muxes, eeprom.	
V5.0RTC	Local power for PIC, etc.	25 mA
+12V	Pulsers	170 mA
HV1	Probe Mux Bias Power	Transducer dependent
HV2	Transmit Power (Tissue)	User variable
HV3	Transmit Power (Doppler)	User variable

- **Battery**

  - Smart" pack, 4-cell, 11.25 VDC, 4.4 amp-hours, rechargeable lithium ion battery pack
  - Operating range: (values listed are approximations)

    - Active use ..... 30-60 minutes (mode & display brightness dependent)
    - Standby mode ..... 2.0-3.0 hours
    - Storage mode (in Scan Engine) ..... 3 weeks

- **Battery Charger, 2-Bay**

  - Models:
    - Z311: Domestic Version..... 110 VAC power cord
    - Z312 : International Version ..... 220VAC power cord
  - Operating Modes:
    - **CHARGE** Mode ..... 1.0 hour (dependent current charge state)
    - **RECALIBRATE** Mode..... 14 hours (discharge->charge->discharge-fully charge)
  - Bays:
    - Left Bay ..... **Recalibrate** or **Charge** operation
    - Right Bay..... **Charge** operation only

- **AC Power Adapter (2.0 Scan Engine)**

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- Models:
  - Z316 : Domestic Version..... 110 VAC power cord
  - Z317 : International Version ..... 220 VAC power cord
- Voltage Output
  - +9V to +12V..... +/- 5% over loading

3.12 Temperature, Humidity, Pressure Limits

System: (During Operation)**:**

- Temperature 0^{o} to 35^{o} Celsius | (32^{o} to 95^{o} F)
- Relative Humidity 15–80%
- Elevation 3,100 to (-116) Meters | 10,200 to (-1,250) Feet

System: (During Shipping/Storage)**:** ***Battery <u>MUST</u> be REMOVED from Scan Engine!***

- Temperature -20 to 60^{o} Celsius | (-4^{o} to 158^{o} F)
- Relative Humidity 15–90%
- Elevation 5,944 to (-116) Meters | 19,500 to (-1,250) Feet

3.13 Device Classification

- FDA Class II Device Classification
- CE / MDD Class IIa-rule 10 active device intended for diagnosis

3.14 Safety Standards

All ZONARE instruments, cables, and diagnostic ultrasound imaging transducers have been designed to meet the essential requirements contained in:

- 93/42/EEC (Medical Device Directive).

In addition, all the above listed equipment meets the following appropriate requirements:

- UL 2601-1 (Standard for Medical Electrical Equipment Part 1: General Requirements for Safety)

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- IEC 60601- (Medical Electrical Equipment Part 1: General Requirements for Safety)
- JIS-T-1001 (General Requirements of Medical Electrical Equipment), including limits for current leakage and isolation from a primary power line
- Testing for compliance with the essential requirements of the Medical Device Directive has been performed.

The **z.one** meets the acoustic output emission guidelines established by the U.S. Food and Drug Administration (FDA). Acoustic output quantities have been measured, and are displayed, in accordance with the standards listed under "Guidance Documents".

3.15 DICOM Standard

- NEMA PS 3.15: 2000, Digital Imaging and Communications in Medicine (DICOM)-Part 15: Security Profiles

3.16 Product Labeling

The following figures depict the labeling that is required by various regulatory authorities, and describe their location.

Contact ZONARE if any of these labels are missing or damaged beyond legibility. The **z.one** labels herein are for reference only and are not shown to scale.

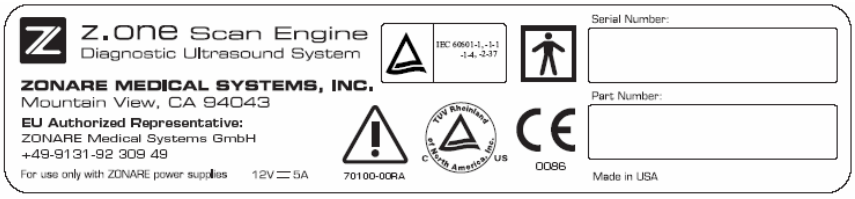

Figure 1: Label, Scan Engine – Serial/Part No.

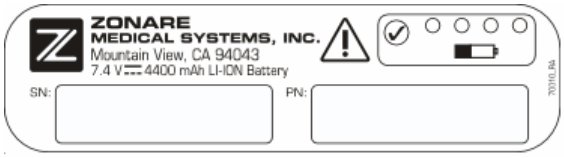

Figure 2: Label, Battery - Model/Serial No.

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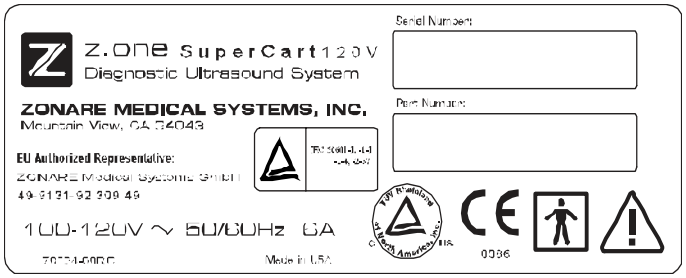

Figure 3: Label, 100-120V SuperCart rear panel - Model/Serial No.

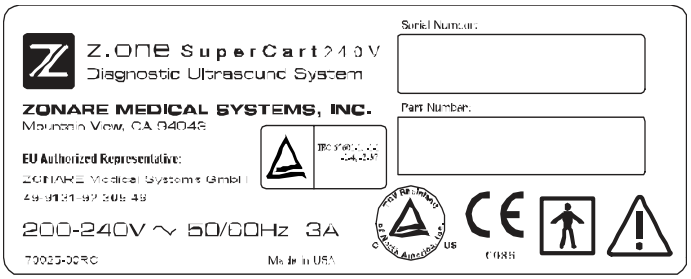

Figure 4: Label, 200-240V SuperCart rear panel - Model/Serial No.

Figure 5: Label, *mini*Cart rear panel - Model/Serial No.

Figure 6: Label, 100-120V SuperCart Backpack Outlet Strip

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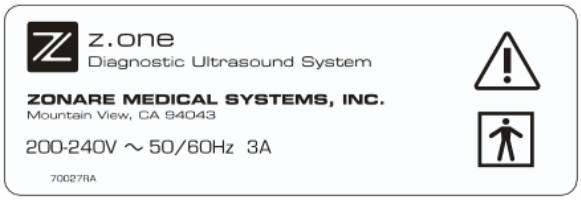

Figure 7: Label, 200-240V SuperCart Backpack Outlet Strip

Figure 8: Label, L10-5 Linear Array Transducer (S/N & P/N)

Figure 9: Label, L8-3 Linear Array Transducer (S/N & P/N)

Figure 10: Label, C5-2 Curved Array Transducer (S/N & P/N)

Figure 11: Label, E9-4 Endo Vaginal Transducer (S/N & P/N)

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Figure 12: Label, P4-1 Phased Transducer (S/N & P/N)

Figure 13: Label, P10-4 Phased Transducer (S/N & P/N)

Figure 14: Label, AC Power Battery Adapter

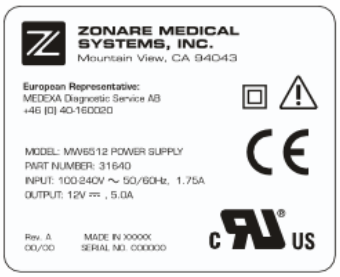

Figure 15: Label, AC Power Adapter Power Supply

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4 TOP-LEVEL PRODUCT OVERVIEW

4.1 Major Assembly Identification

SuperCart

***mini*Cart**

Scan Engine (*Ultra*-2.0)

Figure 16: z.one Major Assembly Illustrations

4.2 Transducers

L10-5 Linear

L8-3 Linear

C5-2 Convex

E9-4

P4-1 Sector

P10-4 Sector

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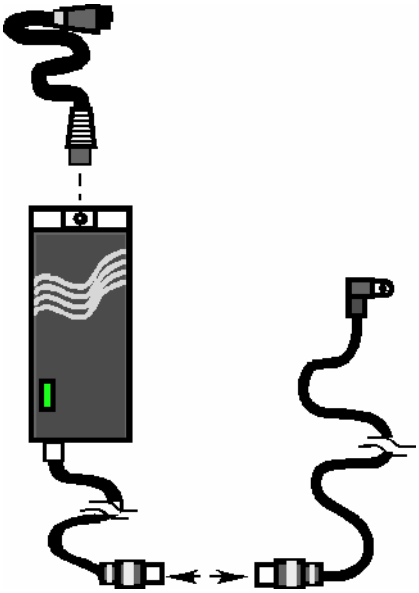
Figure 17: Transducer Illustrations

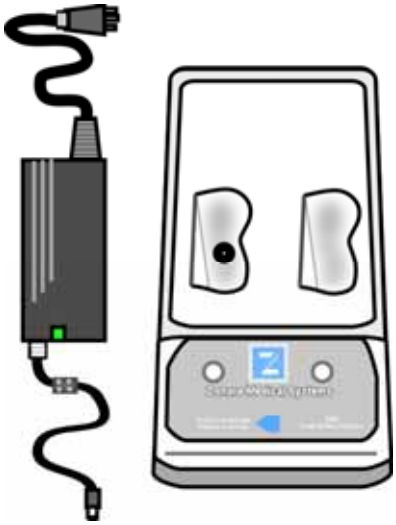
4.3 Accessory Components

USB Memory Stick

Lithium-Ion Battery Pack



AC Power Adapter



Battery Charger, 2-Bay

Figure 18: Accessories

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4.4 SuperCart User Interface Controls (Overview)

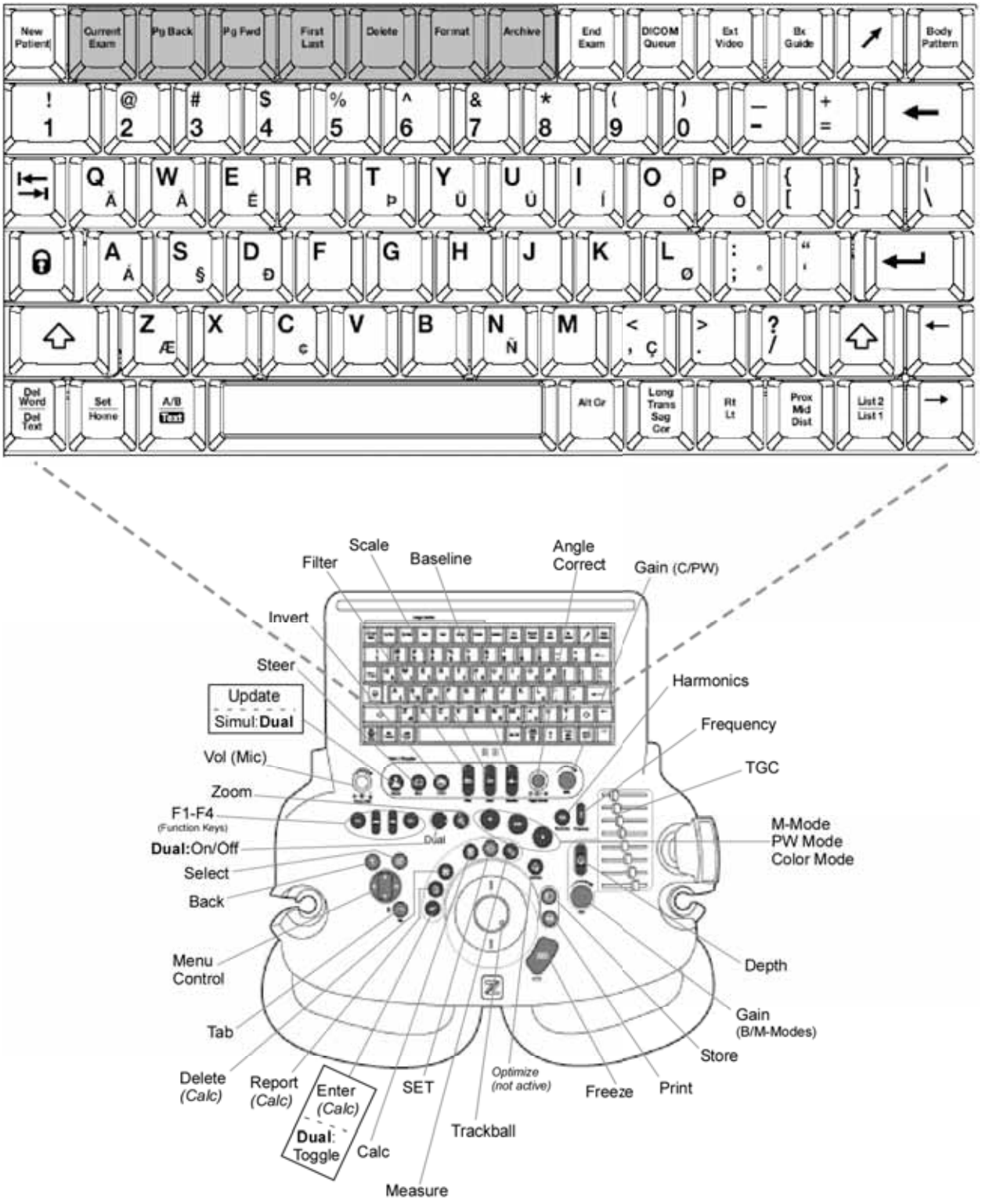

Figure 19: SuperCart User Interface Controls (Overview)

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4.5 Scan Engine User Interface Controls (Overview)

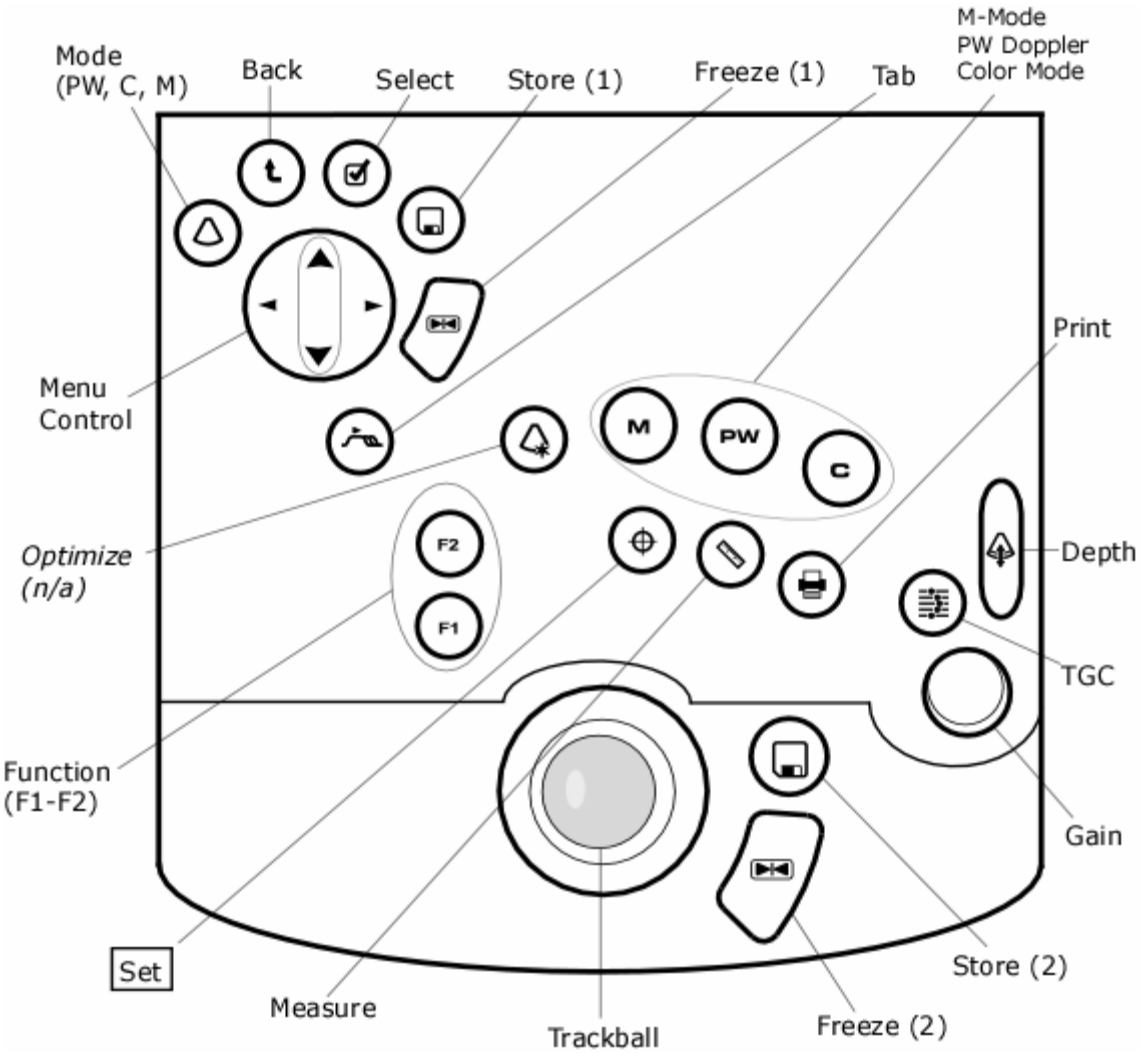

Figure 20: Scan Engine User Interface Controls (Overview)

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4.6 SuperCart User Interface Controls (Detailed)

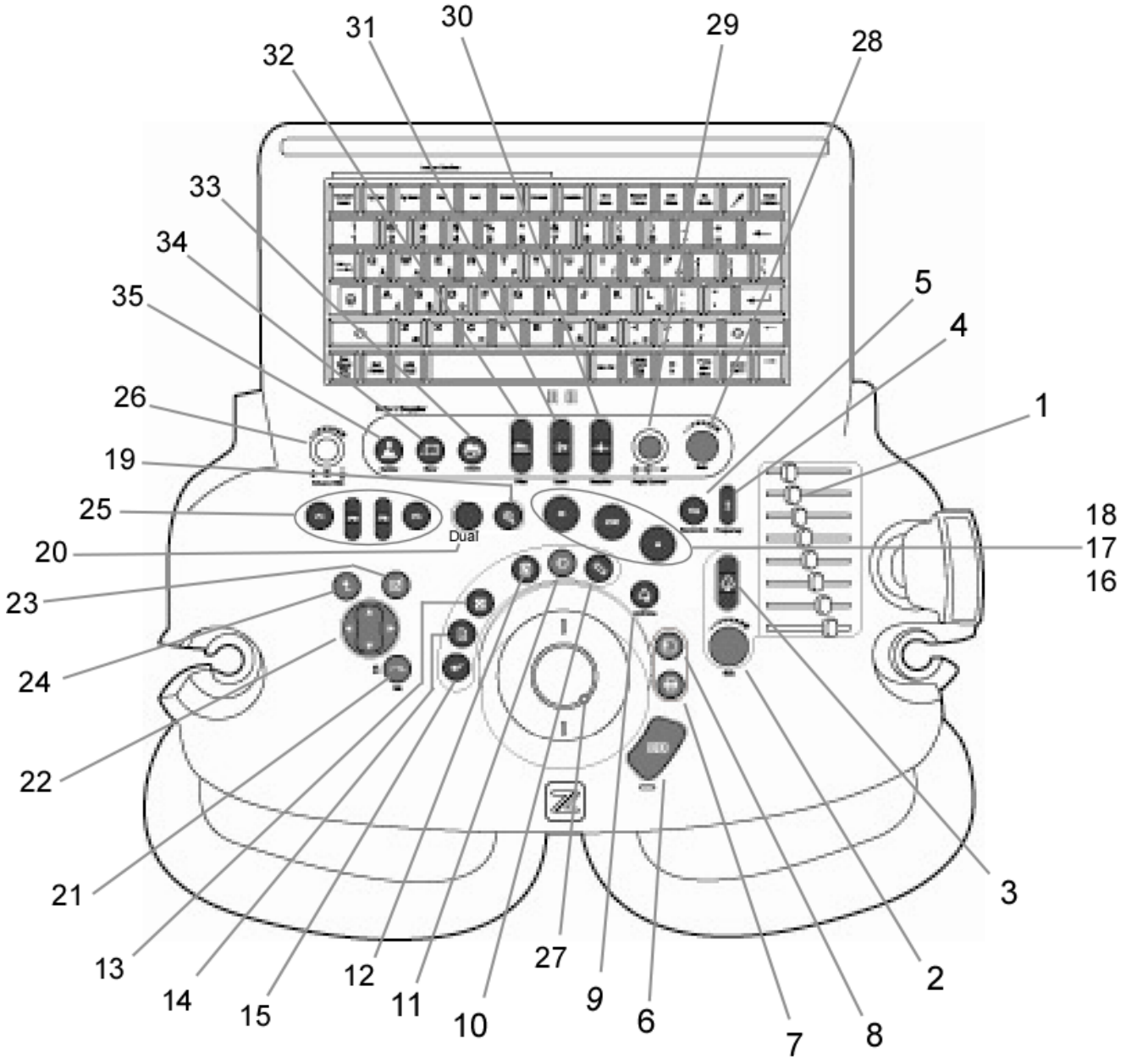

Figure 21: SuperCart User Interface Layout

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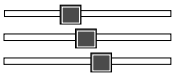
4.6.1 SuperCart User Interface Functions

Number	System Control	Description
1	 TGC Slidepots	Changes gain of image at discrete depths
2	GAIN	Changes overall gain of Tissue image (master)
3	DEPTH	Adjusts (Up/Down) the imaging depth of the display
4	FREQUENCY	Rocker switch enables increasing/decreasing transmit frequency
5	HARMONICS	Activates tissue harmonics imaging mode
6	FREEZE	Halts or re-starts active imaging on the display
7	PRINT	Sends current image to device(s) previously specified in System Setup menu (CompactFlash, DICOM printer, DICOM store). When external printer is selected, key press initiates external print trigger signal to B/W printer
8	STORE	Sends current image to device(s) previously specified in System Setup menu (CompactFlash, DICOM printer, DICOM store)
9	*OPTIMIZE*	TBD: *Future feature enhancement*

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10		MEASURE	Brings up dynamic caliper (live) or calculation menu (frozen)
11		"**SET**"	Used to toggle the function of active items on display
12		CALC	Brings up Calculation tools on the display
13		DELETE (Calc)	Deletes active Calculation tool from the display
14		REPORT (Calc)	Initiates a Calculation report
15		ENTER (Calc) / **DUAL:Toggle**	Shared function key: 1) Ends the current Calculation process, and produces a result 2) Toggles between the (A) or (B) image, as the "Active" (selected) image, in DUAL mode
16		C	Color (Doppler) Mode, toggle activates/de-activates
17		PW	Pulsed Wave (Doppler), toggle activates/de-activates
18		M	M-Mode (tissue motion), toggle activates/de-activates
19		ZOOM	Initiates the variable image magnification process
20		**DUAL**	Activates **DUAL** imaging (side-by-side) mode

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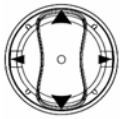
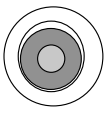
21	TAB	Advances through four (4) on-screen menus (*Imaging, Presets, Patient Info, Tools*)
22	 Menu Control	Functions like a computer mouse or joystick, for scrolling through on-screen menu selections (up/down), and modifying settings for selected on-screen functions (left/right)
23	SELECT	Activates currently highlighted selection in the on-screen menu.
24	BACK	Returns back one window, in the on-screen display menu
25	F1 –F4	Function keys, user configurable in System Setup menu
26	VOLUME-MIC	Push-button (in center) turns on/off Microphone activation function. Rotary knob changes speaker volume output.
27	Trackball	Used for positioning the cursor, defining size/position of ROI in color mode, positioning measurement tools, reviewing cine-loop images and navigating form/tables/worksheets/reports

COLOR/DOPPLER CONTROLS

28	GAIN	Changes master gain for Color and PW Doppler modes
29	 ANGLE CORRECT	Push-button activates/toggles Doppler angle correction tools. Rotary knob makes fine adjustments to angle correction.

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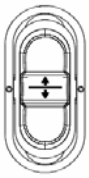
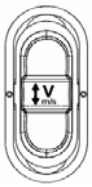
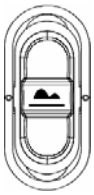
30		BASELINE	Changes Doppler frequency (velocity) baseline
31		SCALE	Changes active frequency (velocity) range in Color and PW
32		FILTER	Changes high-pass filter, used in Color and PW
33		INVERT	Switches the blood flow mapping direction, in Color and PW
34		STEER	Toggles through 3 (straight, left, right) steered Doppler options
35		UPDATE / **SIMUL: (DUAL)**	Shared function key: 1) Toggles between simultaneous live time-shared updating of the PW and 2D imaging mode(s) (B-Mode in duplex, and B-Mode and Color in triplex), or providing a reference-only (frozen) 2D image while devoting 100% of ultrasound acquisition time to PW mode 2) Activates ***SIMULTANEOUS*** operation in **DUAL** mode

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4.7 SuperCart & *mini*Cart Keyboard Controls (Detailed)

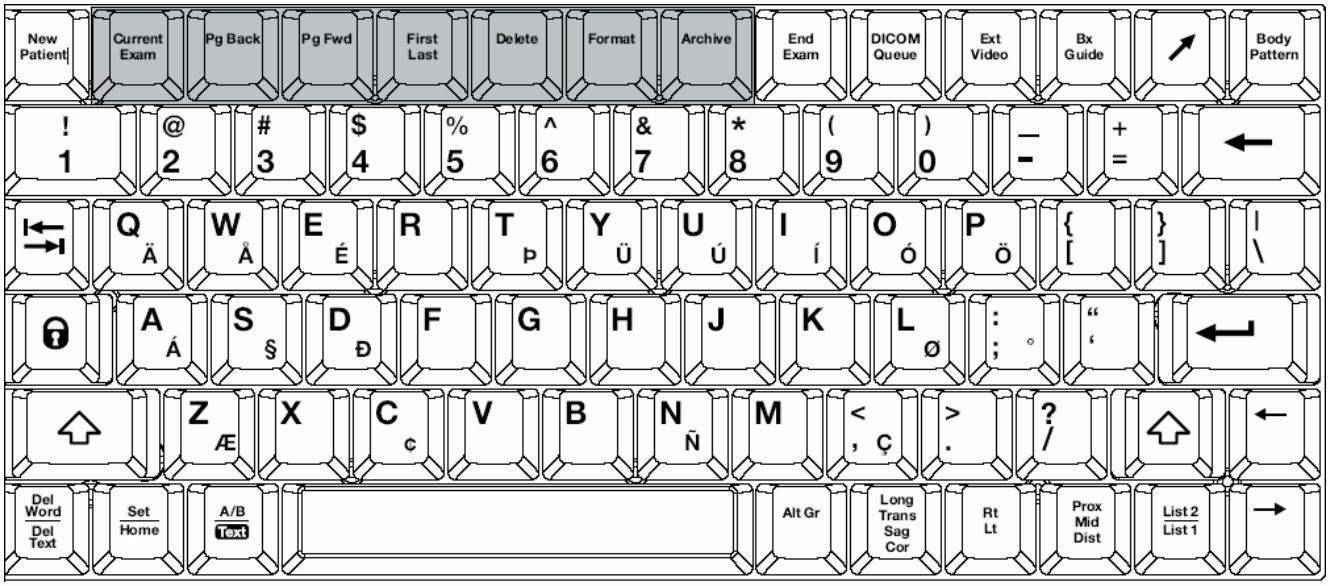

Figure 22: SuperCart Keyboard Layout

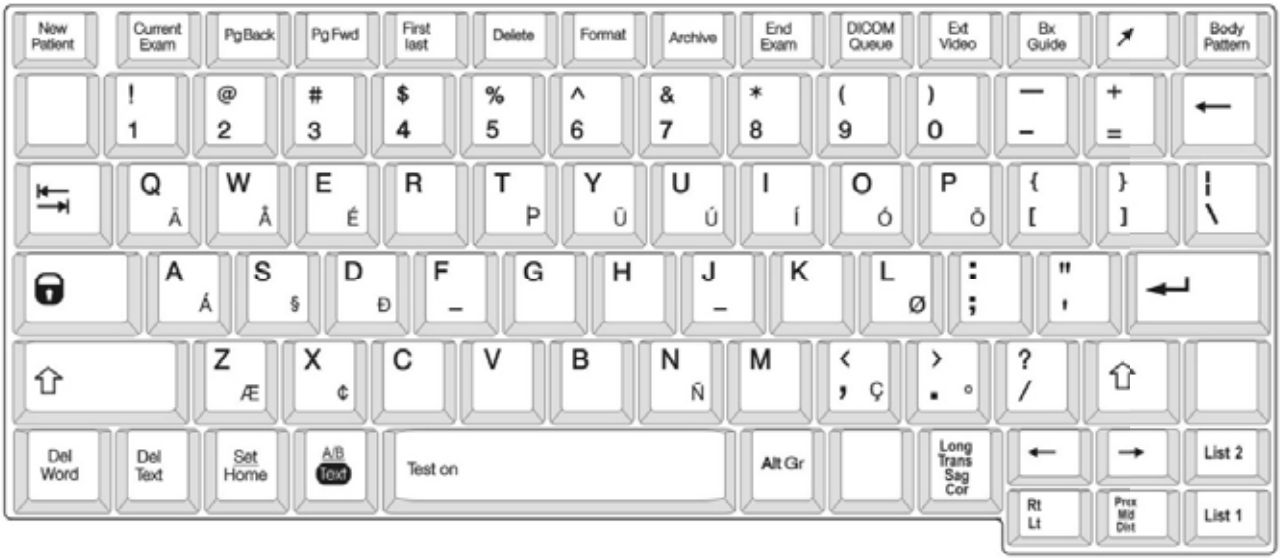

Figure 23: *mini*Cart Keyboard Layout

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KEYBOARD: SPECIAL FUNCTION CONTROLS

Key	System Control	Description
	NEW PATIENT	This is a toggle key. The first press will display the Patient Information page. The second press will return to the imaging display.
	CURRENT EXAM	If there is an exam in progress, pressing this key will display the in-progress exam's images, most recently stored image displayed first. If there is no exam in progress, pressing this key will have no effect.
	PG BACK	This key only works when in in-progress exam review or archived exam review. Pressing this key will display the previous image, or page of images if in a multi-image display format. Once the first page is reached, the key press will have no effect.
	PG FWD	This key only works when in in-progress exam review or archived exam review. Pressing this key will display the next image, or page of images if in a multi-image display format. Once the last page is reached, the key press will have no effect.
	FIRST LAST	This key only works when in in-progress exam review or archived exam review. Pressing this key will toggle between the first stored image (or first page of images in a multi-image display format) and the last stored image (or last page of images in a multi-image display format).
	DELETE	This key only works when in in-progress exam review or archived exam review. When an image has been selected, pressing the Delete key will tag the image for deletion by drawing a red X through it. If the selected image already has been tagged for deletion (red X) pressing the Delete key will remove the red X, untagging the image.
	FORMAT	This key only works when in in-progress exam review or archived exam review. Pressing this key will toggle between the following image formats: 2 x 2, displaying 2 rows of 2 images (4 images); 3 x 2, displaying 2 rows of 3 images (6 images); and a full-size image.
	ARCHIVE	This is a toggle key. The first press will display the Patient Selection Table. The second press will return to imaging.
	END EXAM	When an exam is in progress, pressing the End Exam key will close the exam. If no exam is in progress, pressing this key will have no effect.
	DICOM QUEUE	This is a toggle key. The first press will display the DICOM queue. The second press will return to imaging.
	EXT VIDEO	This is a toggle key. The first press will change the video input to VGA; the second press will change the video input to S-Video; the third press will change the video input to composite video; the fourth press will return to the Barco monitor.
	BX GUIDE	This is a toggle key. The first press will display the biopsy needle path guide. The second press will remove the biopsy needle path guide.
	(Arrow)	This is a toggle key. It will only work when the image is frozen. Pressing the key when the image is frozen will display an arrow graphic in the middle of the display.
	BODY PATTERN	This is a cycling key. Pressing the Body Pattern key will display a Body Pattern for the Exam Type in use. Pressing the key will cycle through available Body Patterns, including a blank.
	DEL WORD | DEL TEXT	Pressing Del Text will remove all text annotations and arrow graphics displayed. Pressing Shift+Del Word will delete the most recently entered text annotation, whether it be free text, POT, or List entry.

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	SET | HOME	Pressing Home will move the text annotation cursor to its default home position. Pressing Shift+Set Home will set the current cursor position as the new Home position.
	A/B | TEXT	Pressing Text will display the text annotation cursor. Pressing Text again will remove the text annotation cursor. Shift+A/B Text is not implemented.
	ALT GR	This key is currently non-functional.
	LONG TRANS SAG COR	This is a cycling key. Pressing this key will cycle between displaying LONG, TRANS, SAG, and COR, for selection as pre-created text annotation.
	RT LT	This is a cycling key. Pressing this key will cycle between displaying RIGHT and LEFT, for selection as pre-created text annotation.
	PROX MID DIST	This is a cycling key. Pressing this key will cycle between displaying PROX, MID, and DIST, for selection as pre-created text annotation.
	LIST 2 | LIST 1	This is a cycling key. Pressing List1 will cycle between displaying items entered in List1. Pressing Shift+List2 will cycle between displaying the items entered in List2.

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4.8 Scan Engine User Interface Controls (Detailed)

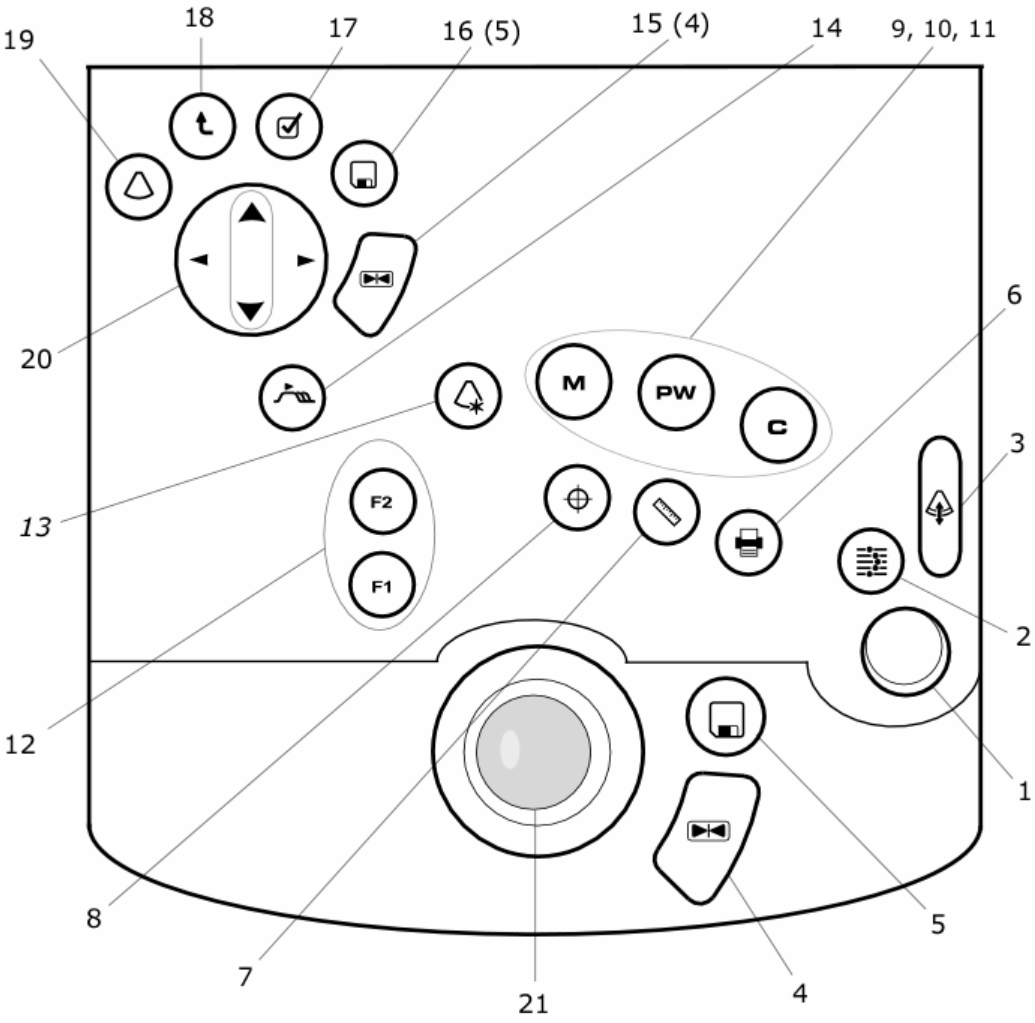

Figure 24: Scan Engine User Interface Layout (Detailed)

4.8.1 Scan Engine User Interface Functions

Number	System Control	Description
1	GAIN	Controls the overall gain for B-Mode and Color Doppler
2	TGC	Turns on the virtual TGC graphic

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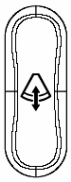
3	 DEPTH	Adjusts the imaging depth shown on the display
4, 16	FREEZE	Halts or re-starts active imaging
5, 17	STORE	Stores current image device(s) previously specified in System Setup menu (CompactFlash, DICOM printer, DICOM store). When external printer is selected, key press initiates external print trigger signal to B/W printer
6	PRINT	Prints the current images(s) to selected printer
7	MEASURE	Brings up dynamic caliper (live) or calculation menu (frozen)
8	“**SET**”	Used to toggle a selected item/function on-screen
8	**C**	Color (Doppler) Mode, Activates/de-activates
10	**PW**	Pulsed Wave (Doppler), Activates/de-activates
11	**M**	M-Mode (tissue motion), Activates/de-activates
12	F1, F2	Function keys, user configurable in System Setup menu

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13		*OPTIMIZE*	TBD: *Future feature enhancement*
14		TAB	Advances through four (4) on-screen main menus (*Imaging, Presets, Patient Info, Tools*)
15, 16		*see item 4 and 5 above*	
17		SELECT	Activates the currently highlighted selection in the on-screen menu.
18		BACK	Returns back one window, in the on-screen display menu
19		MODE	Brings up the active scanning mode (C, PW, M) selection screen
20		Menu Control	Functions like a computer mouse or joystick, for scrolling through on-screen menu selections (up/down), and modifying settings for selected on-screen functions (left/right)
21		Trackball	Used for positioning the cursor, defining size/position of ROE in color mode, positioning measurement tools, reviewing cine-loop images and navigating form/tables/worksheets/reports

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4.9 SuperCart Rear I/O Panel: Layout & Functional Definitions

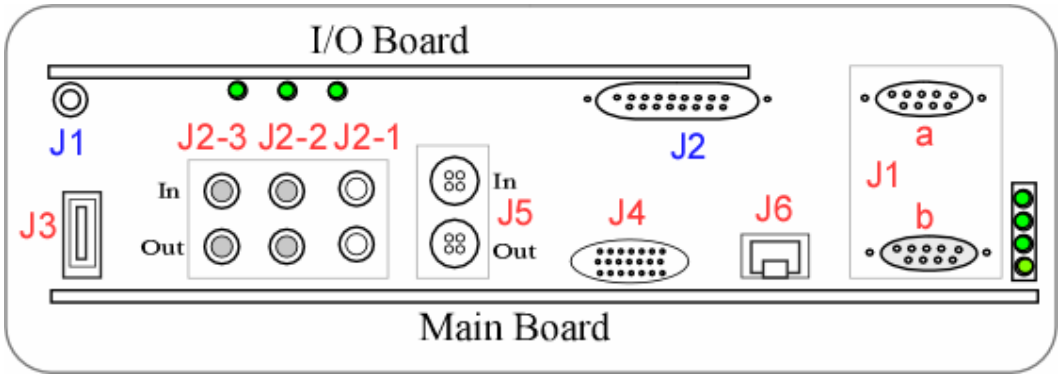

Figure 25: SuperCart Rear I/O Panel

4.9.1 Functions: I/O Board Connectors

Jack #	Function	Direction
J1	Remote Print "Expose" (Trigger)	Output
J2	*Parallel Printer (currently not supported)*	*Output*

4.9.2 Functions: Main Board Connectors

Jack #	Function	Direction
J1 (a)	RS-232 Serial Port "A" (configurable for output of report data)	Input/Output
J1 (b)	RS-232 Serial Port "B" (configurable for output of report data)	Input/Output
J2-1	Composite Video – [OUT (bottom), IN (top)]	Input/Output
J2-2	Audio, LEFT – [OUT (bottom), IN (top)]	Input/Output
J2-3	Audio, RIGHT – [OUT (bottom), IN (top)]	Input/Output
J3	USB (2.0) Port	Input/Output
J4	SVGA Video - (External Monitor)	Output
J5	S-Video - – [OUT (bottom), IN (top)]	Input/Output
J6	Ethernet 10/100BaseT - (Network)	Input/Output

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4.10 *mini*Cart I/O Connections: Layout & Functional Definitions

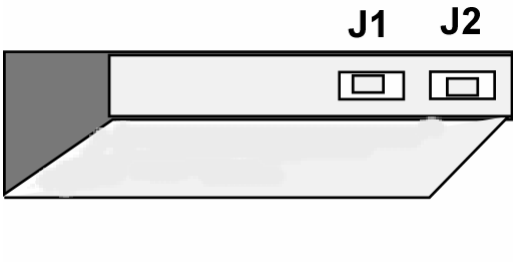

Figure 26: *mini*Cart USB Hub Connections

4.10.1 Functions: I/O Port Connectors

Jack #	Function	Direction
J1, J2	USB (2.0) Ports - Hub	Input/Output

4.11 Scan Engine (2.0) Rear I/O Connections: Layout & Functional Definitions

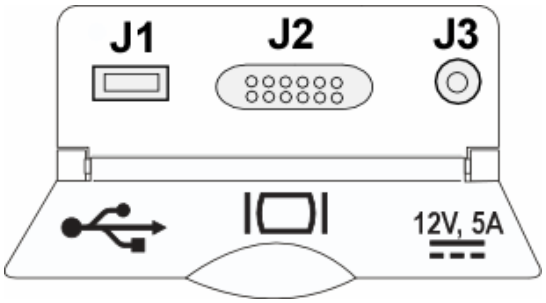

Figure 27: Scan Engine (2.0) Rear I/O Connections

4.11.1 Functions: I/O Port Connectors

Jack #	Function	Direction
J1	USB (2.0) Port	Input/Output
J2	DVI Video - – [OUT]	Output
J3	+12VDC – AC Power Adapter Input	Input

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5 SYSTEM UNCRATING & INSTALLATION PROCEDURES

5.1 Product Shipment

Shipping containers should be inspected for damages, and the "Tip-n-Tell" indicator for signs of mishandling during shipment. If any problems are found, immediately notify the shipping carrier. All installation and set-up of equipment should be done following official ZONARE product installation procedures.

5.2 Electrical Requirements

Standard grounded (3-Prong) 110-120 VAC, 15 amp, 60Hz. wall outlets (or proper 220-240 VAC outlets for systems configured for these power requirements) are required for the **z.one** Diagnostic Ultrasound System.

5.3 Environmental and Space Requirements

The **z.one** Diagnostic Ultrasound System may be located anywhere within the facility, as long as there is adequate power outlets and remote network connectivity (at facilities utilizing a DICOM print/storage device hook-up).

5.4 Uncrating

5.4.1 SuperCart:

STEPS:

1. Prior to opening any packaging, inspect the "Tip-n-Tell" indicator (attached to the outside of the main shipping box) for signs that the **z.one** has been subjected to shock or tilt conditions during shipment. Make notes of any discrepancies, and immediately report to the shipping carrier.
2. Remove all banding straps surrounding the cardboard main shipping container.
3. Lift off the top cover portion of the main cardboard shipping container, and set aside.
4. Remove the small boxes (containing the **z.one** transducers and Scan Engine) from the inner storage box area (resting atop the SuperCart).
5. Lift the inner storage box upwards, and remove it from the main shipping container.
6. Grasping the sides, slide the cardboard main shipping box upwards, exposing the **z.one**. Continue lifting until the cardboard box can be completely removed, and set aside.

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Figure 28: Main shipping container removal

7. Remove the clear packing tape that is used to secure the foldable wooden loading ramp in its upward-facing shipping position. Lower the ramp on its hinges.

Figure 29: Loading ramp lowering

8. Remove the clear packing tape that secures the front support to the base during shipping. Grasp the removable front support section of the wooden shipping base (at the bottom-front of the system), pull it directly outwards away from the **z.one**, and set aside.

Figure 30: Removable section of shipping base

9. Remove the plastic packaging bag to expose the **z.one.**

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10. Press down fully and then release, on the brake pedal (at the front of the **z.one**), to release locking of the SuperCart's wheels.

Figure 31: Brake release of wheels

11. Rotate the wheels from their 90 degree angled storage position, to be inline with the loading ramp and enable rolling the system out of crate.
12. Being careful to control the system's momentum, roll the **z.one** down the ramp, and out of crate.
13. Remove all protective plastic wrap and foam packaging materials.
14. Inspect the entire **z.one** for damage, paying close attention to the LCD display on the SuperCart.
15. Move the **z.one** to the installation area.

5.4.2 *mini*Cart:

STEPS:

1. Prior to opening any packaging, inspect the "Tip-n-Tell" indicator (attached to the outside of the main shipping box) for signs that the **z.one** has been subjected to shock or tilt conditions during shipment. Make notes of any discrepancies, and immediately report to the shipping carrier.

2. Remove all banding straps surrounding the cardboard main shipping container.
3. Grasping the sides, slide the cardboard main shipping box upwards, exposing the *mini*Cart and container contents. Continue lifting until the cardboard box can be completely removed, set aside.

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4. Remove the plastic covering and shrink wrap from the *mini*Cart and container contents.
5. Remove the small boxes (containing the **z.one** transducers and Scan Engine) from the container.
6. On the container base, remove or cut the clear packing tape that secures the rear flap and unfold the rectangle cardboard support at the rear of the system. This rear flap is partially glued and will require a slight pull to release. This will provide an exit and slight ramp for removing the *mini*Cart from the base.

7. Unlock the brakes (two front wheels), and firmly grasp the rear handle.
8. Being careful to control the system's momentum, gently roll/lift the system down the ramp and off the base.

Note: Make sure that you are supporting the weight of the system while removing as the cardboard mock-ramp is not designed to support the full weight of the miniCart

9. Remove all protective plastic wrap and foam packaging materials.
10. Inspect the entire **z.one** for damage, paying close attention to the LCD display on the *mini*Cart.
11. Move the **z.one** to the installation area.

5.5 Mechanical Verification

STEPS:

1. Perform a check to verify proper operation of all of the following mechanical components.
   - Ensure wheels and brakes function properly
   - Raise and lower the Cart (SuperCart or *mini*Cart) height adjuster (pull release lever located on the right of the system), to verify smooth operation and positive locking
   - Ensure the LCD display monitor rotates and adjusts properly

SuperCart:

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- Insert Scan Engine into docking pocket in SuperCart, and press down to ensure free movement and full engagement.

***mini*Cart:**

- Place the Scan Engine onto the *lily pad* docking area of the *mini*Cart, and pull the Scan Engine towards you, to ensure full docking engagement.

5.6 System Installation:

5.6.1 Initial Checks

STEPS:

1. Check to ensure all peripherals, software level, and serial numbers correspond with sales order. Make note of any missing items or discrepancies.
2. Check the two AC power rating labels, located by the system power receptacle and inside the rear cover by the AC outlet box, to verify power rating matches AC power level present at installation site.
3. Measure voltage at AC receptacle, at install site, to verify proper power levels are present.

WARNING

To prevent possible damage to the electronics of the Scan Engine from condensation, the following warning must be observed:

If the Scan Engine has been subjected to an environment during shipping/transport that differs greatly in temperature and/or humidity, from the environment where it has been moved for installation/intended operation, the unit should be allowed to stand for a period of no less than 30 minutes prior to inserting battery or powering on.

5.6.2 Installing the Lithium-Ion Battery Pack, into the Scan Engine

STEPS:

1. Remove the battery pack from its shipping materials
2. Correctly orient the battery pack and slide fully into the battery port on the Scan Engine, until fully seated (latched).

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Figure 32: Battery Pack Installation

5.6.3 Docking Scan Engine into SuperCart

STEPS:

3. While securely grasping the Scan Engine, position the unit with the probe connector facing to your LEFT, and the CompactFlash access door facing UP.
4. Carefully align the Scan Engine with the guide slots in the Scan Engine pocket of the SuperCart.
5. Lower the Scan Engine into the pocket and press the unit downward fully, retracting the spring loaded shelf, until the dock-lock plates engage into the slots on the Scan Engine.

Figure 33: Scan Engine to SuperCart Docking

WARNING

To maintain the integrity of the electronic equipment within the z.one, it is critically important that a specific sequence be followed at all times, for turning ON or OFF system power. The sequences listed below should always be followed.

5.6.4 Docking Scan Engine on *mini*Cart

STEPS:

1. Hold the Scan Engine centered (horizontally) and rearward above the lily pad on the miniCart.
2. Line up the tracks on the top surface of lily pad with the tracks on the bottom of the Scan Engine.
3. While resting flat on the lily pad surface, gently slide the scan engine directly towards you (forward), to engage it on the docking latches. Continue to slide the Scan Engine towards you, until a positive audible "click" is heard.

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Figure 34: Scan Engine to *mini*Cart Docking

4. Open the I/O access door at the rear of the Scan Engine, and connect the docking connector cable assembly to the mating connectors on the Scan Engine

WARNING

To maintain the integrity of the electronic equipment within the z.one, it is critically important that a specific sequence be followed at all times, for turning ON or OFF system power. The sequences listed below should always be followed.

5.6.5 Powering-ON the z.one

NOTE: The ***mini*Cart** receives direct AC power (no manual circuit breaker). Therefore anytime the main AC power cord is connected to an active outlet and the other end connected at the rear panel of the system, source power is active.

5.6.5.1 SuperCart Power-ON

STEPS:

1. Make sure the AC Main Circuit Breaker on the SuperCart is in the "**ON**" (Up) position (see illustration below).

Figure 35: SuperCart: AC Power Circuit Breaker

NOTE: *SuperCart is only in a "ready" state at this point, and will not begin operation until a Scan Engine has been docked, and the Scan Engine is powered on.*

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Within a few seconds after turning on the SuperCart's circuit breaker (if the Scan Engine has been previously docked) the bottom green status LED, located on the righthand side of the rear I/O panel (at the back of the SuperCart), should begin flashing to indicate successful recognition of a docked Scan Engine in the pocket.

5.6.5.2 Scan Engine (System Complete) Power-ON

STEPS:

1. Using the underside of your finger (as shown in the "**YES**" illustration below), gently ***press-and-release*** the green-colored (rubber membrane) Power On/Off Switch, to initiate the power on sequence. The On/Off button should now be illuminated (green) and the SuperCart should begin displaying ZONARE start-up ("Splash") screen within approximately 10 seconds.

"**YES**" Method" "**NO**"

Figure 36: Scan Engine: Power ON/OFF

5.6.6 Powering-OFF the z.one System

NOTE: The ***mini*Cart** receives direct AC power (no manual circuit breaker). Therefore anytime the main AC power cord is connected to an active outlet and the other end connected at the rear panel of the system, source power is active.

CAUTION

*To ensure the integrity of the stored User parameters, and system configuration, the Power ON/OFF button on the Scan Engine should always be used **FIRST**, as the method for shutting down a fully operating **z.one** (SuperCart and Scan Engine) system.*

*Failure to allow for a normal power-down sequence by the Scan Engine (such as by improperly pulling out the AC power cord or toggling the AC circuit breaker on the SuperCart while the **z.one** is still operating), may result in lost patient image data.*

5.6.6.1 Scan Engine Power-OFF

STEPS:

1. Using the underside of your finger, gently ***press-and-release*** the green-colored (rubber membrane) Power On/Off Switch, to initiate the start of a power OFF sequence.

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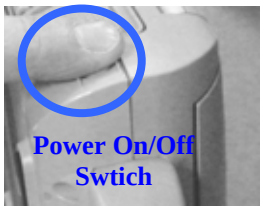


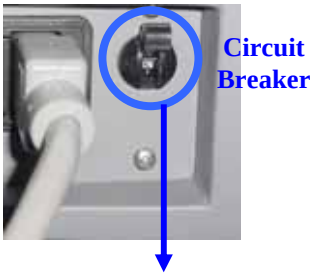
NOTE: *The* ***z.one*** *will NOT immediately power down, as the Scan Engine will perform a properly ordered shutdown sequence (taking approximately 10 seconds).*

2. A message should appear on the Monitor of the SuperCart within a few seconds, indicating the start of the normal shutdown sequence.

5.6.6.2 SuperCart Power-OFF

STEPS:

- To shutdown AC power to the SuperCart, move the circuit breaker down (located at the back of the **z.one**), to the "OFF" (down) position.



5.6.7 AC Power Adapter: Use & Operation

WARNING

There are no User or Field Service repairable components within the AC Power Pack. Any defective units should be returned to the Zonare factory for repair/replacement.

Standalone use (undocked from the SuperCart or *mini*Cart) of the Scan Engine normally utilizes a fully charged battery pack to power the unit. However to allow for extended standalone operation of the Scan Engine (in excess of 1 hour), an AC Power Pack is available from Zonare as an alternate power source. The AC Power Pack is plugged into the DC power port on the rear of the 2.0 Scan Engine.

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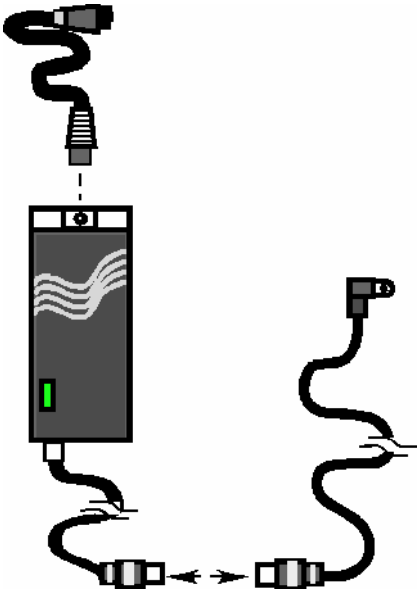

Figure 37: AC Power Adapter

STEPS:

1. Power off the Scan Engine, and ensure it is being used remotely (undocked) from the SuperCart or *mini*Cart
2. Plug the small connector of the DC Adapter Cable, into the mating socket on the DC power port, located at the back of the Scan Engine (inside the Rear I/O access door).
3. Connect the output connector of the DC Power Cable (out of the Power Supply) to the DC Adapter Cable's mating connector
4. Plug the AC Power Cable's female connector into the socket on the Power Supply
5. Plug the other end of the AC Power Cable into an active AC wall outlet
6. Inspect the Power-On indicator LED, on the Power Supply brick, to ensure power is on
7. Power on the Scan Engine and begin normal operation

5.6.8 2-Bay Battery Charger: Use & Operation

WARNING

There are no User or Field Service repairable components within the 2-Bay Battery Charger. Any defective units should be returned to the Zonare factory for repair/replacement.

The Lithium-Ion battery packs, used to power the Scan Engine during standalone (undocked) use, have expected charge retention of approximately 1 hour (during full-use of the Scan Engine). The battery pack is normally kept charged when the Scan Engine is docked within the SuperCart. However to prepare multiple battery packs for standalone Scan Engine use, or to recalibrate battery packs for maximum performance, a Zonare 2-Bay Battery Charger is available.

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Part Number	Description
Z311	2-Bay Battery Charger, Domestic (120V) Model
Z312	2-Bay Battery Charger, International (220V) Model

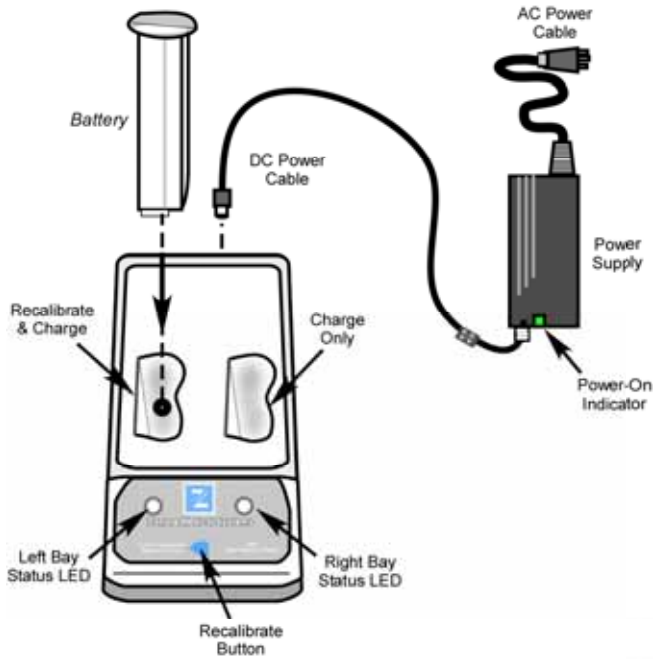

Figure 38: 2-Bay Battery Charger

5.6.8.1 "Recalibrating" Battery Packs

Recommended Intervals:

The **z.one** battery pack contains Lithium-Ion battery cells as well as an electronic "fuel" gauge that keeps track of the charge and discharge cycles of the battery cells. During frequent charge/discharge cycles, it is possible for this fuel gauge to loose its synchronization to the actual charge remaining in the battery. When this happens, it is recommended to "Recalibrate" the battery pack. This process will re-synchronize the fuel gauge to the battery cells.

It is recommended that the "Recalibrating" process be performed on each battery pack at the following interval:

Usage Type	Recommended "Recalibration" Interval
• Battery packs heavily used in *standalone* (undocked) Scan Engine mode	Every 30 charge cycles (or approximately once per month, maximum)
• Battery packs used in Scan Engines primarily operated docked in SuperCart	Every 2 to 4 months

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STEPS:

1. Connect the AC power cable to an active wall outlet, and connect the DC power cable between the power supply and the 2-Bay Battery Charger
2. Insert the battery pack into the LEFT bay of the 2-Bay Battery Charger (Note: Only the LEFT bay performs “Recalibration”)
3. Press the “Recalibrate” button on the 2-Bay Battery Charger
4. During the “Recalibrate” process, the left status LED flashes ORANGE. Once the “Recalibrate” process is completed, this same LED will intermittently flash between ORANGE and GREEN.

NOTE: - The “Recalibrate” process may require 14 hours to fully complete

- The battery pack should NOT be removed prior to completion of the “Recalibrate” process, as the battery will be at an unknown level of charge

5.6.8.2 Charging Battery Packs

STEPS:

1. Connect the AC power cable to an active wall outlet, and connect the DC power cable between the power supply and the 2-Bay Battery Charger
2. Insert the battery pack into the EITHER bay of the 2-Bay Battery Charger
3. The charging cycle on the docked battery pack will automatically begin to execute
4. During the “Charging” process, the corresponding status LED flashes GREEN. Once the “Charging” process is completed, this same LED becomes solid GREEN.

NOTE: - The “Charging” process, in the two bays of the unit, is performed in a “sequential” fashion. If two battery packs are docked into the 2-Bay Battery Charger at the same time, the charger will perform the complete charging sequence on one battery pack, before starting the charging sequence on the second battery.

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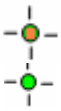
Status LED Condition	LED	Definition	
OFF		No battery pack detected in bay	
ORANGE – "Flashing"		"Recalibration" of battery pack in progress	
ORANGE/GREEN – "Flashing"		"Recalibration" complete (fully charged)	
GREEN – "Flashing"		"Charging" of battery pack in progress	
GREEN - Solid		"Charging" of battery pack complete	
ORANGE - Solid		"Standby" – Battery in bay, waiting to be charged	
RED – "Flashing" (Error)		**Error Cause**	**Resolution**
		- Foreign object in bays	Clear charging area
		- Battery pack defective	Replace battery pack
		- Excessive battery temp *[65°C / 149°F]*	Remove battery to cool

5.7 Transporting - Shipping the Scan Engine

STEPS:

1. If a transducer is attached to Scan Engine, disconnect it and store in an appropriately safe/protected manner
2. Undock the Scan Engine from the SuperCart
3. Ensure that the Scan Engine is powered off
4. Remove the battery pack from the Scan Engine

CAUTION

- *To prevent possible damage to the unit, the battery must be REMOVED from the Scan Engine prior to transport or shipment.*

5. For shipment, ensure that the Scan Engine is packaged in a suitably protective storage container

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6 BASIC SYSTEM CONFIGURATION

6.1 Basic System Configuration Procedures

- **Entering "INSTITUTION" (Hospital) Name**

1. Using the page TAB button , advance menu screen to select **Tools** menu.

Menu Controls

TOOLS Menu

2. Using the Menu Control, arrow down to backlight **SYSTEM SETUP** selection, and press the SELECT button to bring up this menu.

SYSTEM SETUP Sub-Menu

3. Within the **Display** selection, use the Menu Control to backlight **Institution** selection, press Select button to bring up this menu.

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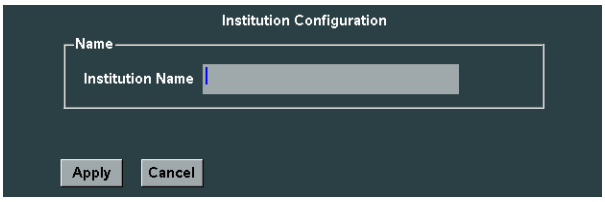
DISPLAY Sub-Menu

INSTITUTION Sub-Menu



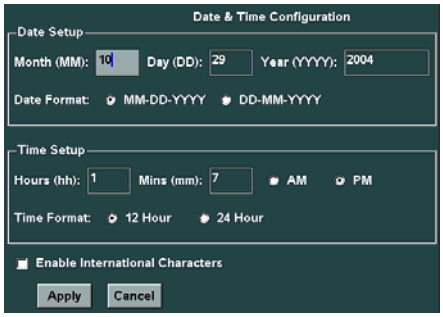
4. Using the alpha-numeric keyboard, enter Institution name (**Note**: Field is limited to 20 character positions)

• Entering "TIME / DATE" Information

1. Within the **Display** selection, use the Menu Control to backlight **Time** selection, press Select button to bring up this menu.

DISPLAY Sub-Menu

TIME (DATE) Sub-Menu



2. Using the alpha-numeric keyboard, enter in the current date/time information. The TAB key on the alpha-numeric keyboard is used for advancing to each successive field.
3. Place the arrow cursor over the **APPLY** soft-button displayed in this menu, and press the **SET** key to save new settings.

• Configuring "AUDIO/VIDEO" Setup

1. Within the **Display** selection, use the Menu Control to backlight **Audio/Video** selection, press Select button to bring up this menu.

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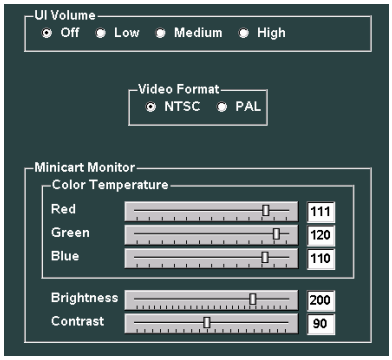
DISPLAY Sub-Menu **AUDIO/VIDEO Sub-Menu**

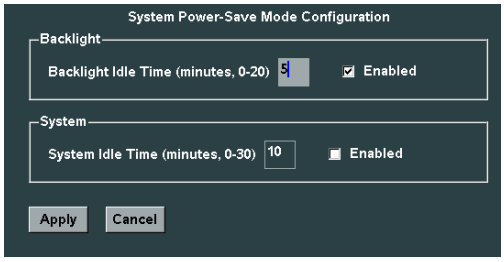


2. Select the desired A/V setup parameters from the menu. This is done by using the trackball to move the arrow pointer (in conjunction with the **SET** key), or using the TAB key on the alpha-numeric keyboard to advance to each successive field, and the **ENTER** key to make selections.
3. Place the arrow cursor over the **APPLY** soft-button displayed in this menu, and press the **SET** key to save new settings.

• Configuring "IDLE MODE" (Power-Saver Mode) Configuration

1. Within the **Display** selection, use the Menu Control to backlight **Idle Mode** selection, press Select button to bring up this menu.

DISPLAY Sub-Menu **IDLE MODE (System Power-Save Mode) Sub-Menu**



The two configurable Idle Mode parameters offered in the menu are:

Title	Function
Backlight	Screen display is "Blanked", after configured time period has elapsed
System	Scan Engine performs a complete sequenced "Power-Down" operation, after configured time period has elapsed

2. Select the desired power saving (Idle Mode) setup parameters from the menu.

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NOTE*:* *Unchecking ☐ the "Enabled" box, for either Idle Mode parameter, disables that time-out function*

3. Place the arrow cursor over the **APPLY** soft-button displayed in this menu, and press the **SET** key to save new settings.

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7 ARCHIVE (MEDIA – PRINT/STORE) CONFIGURATION

7.1 ARCHIVE Configuration

1. Using the TAB button advance the menu screen to select **TOOLS**
2. Using the **Menu Control**, arrow down to backlight the **Archive** selection, and press the SELECT button to bring up this menu.

SYSTEM SETUP Sub-Menu

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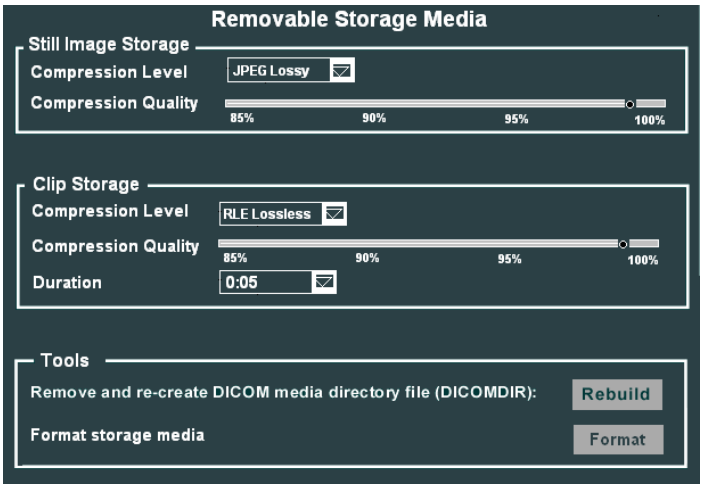
• "MEDIA" (REMOVABLE) Configuration

1. Within the **ARCHIVE** selection, use the Menu Control to backlight **Media** selection, press Select button to bring up this menu.

ARCHIVE Sub-Menu

REMOVABLE MEDIA Sub-Menu



2. Using the alpha-numeric keyboard, enter in the DICOM configuration values/setting in the appropriate fields, as specified in the information provided previously in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.
3. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.
4. The TOOLS area allows for rebuilding (deleting and recreating) of the DICOM DIR image directory file, or in more extreme cases, the ability to completely reformat (erase) the entire contents of the USB Memory Stick.

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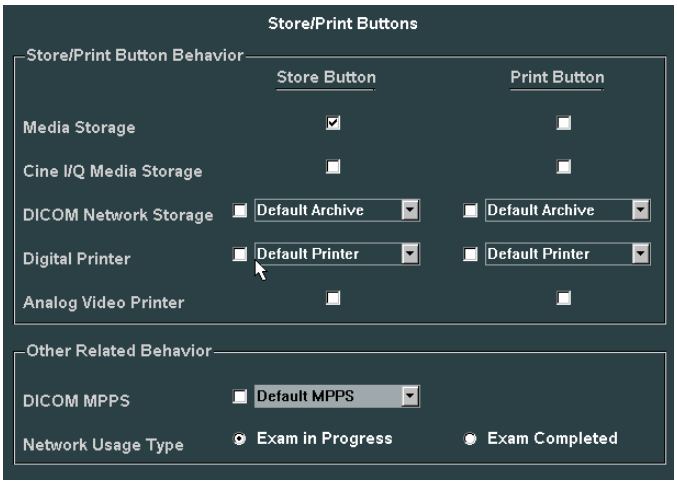
• "PRINT/STORE" Configuration

1. Within the **ARCHIVE** menu, use the Menu Control to backlight **Print/Store** selection, press Select button to bring up this menu.

ARCHIVE Sub-Menu

DICOM PRINT/STORE BUTTONS Sub-Menu



2. Based upon what functions are desired to occur when the PRINT and STORE buttons on the **z.one** are pressed, configure the settings in this menu.
3. Configure the "***Network Usage Type***" selection to reflect the desired DICOM network transfer behavior on the Customer's system.
   - Exam in Progress: Results in each new DICOM image immediately being placed into the DICOM Queue for transfer, each time the STORE key is depressed.
   - Exam Completed: Images are buffered during each STORE key depression, and later placed as a group into the DICOM Queue for network transfer. The images are transferred when the Operator ends the current exam.
4. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

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8 DICOM CONFIGURATION

8.1 "DICOM" Configuration Overview

Prior to installation of the Z.ONE at any medical facility utilizing a **DICOM** network environment, a "Pre-Install Survey Form" (ZONARE P/N: F00044) should have been completed. This form is used for obtaining, in advance, detailed networking and **DICOM** configuration values (IP addresses, AE Titles, etc.) from the ***IT System Administrator*** at the facility. These site-specific values/parameters are required prior to programming the entries in the DICOM configuration menus on the Z.ONE.

A copy of this "Pre-Install Survey, Form" is included on the following pages, as a backup resource.

IMPORTANT

⚠ *Once all of the DICOM parameters have been configured into the required DICOM setup menus, it will be necessary to power down and reboot the* ***z.one*** *in order to initialize the new network connections with the target devices.*

Z.ONE Network Address Info Requirements:

The following information, defining the **z.one**'s identity on the local network at the medical facility and must be assigned ***by the facility's IT Network Administrator***, prior to beginning the setup of the **DICOM** configuration menus on the **z.one**.

Definition	Assigned Value	*Example Only*
• **z.one's assigned (IP Address):**	_ _ _ . _ _ _ . _ _ _ . _ _ _	*10.94.1.105*
• **z.one's assigned (Subnet Mask):**	_ _ _ . _ _ _ . _ _ _ . _ _ _	*255.255.0.0*
• **z.one's assigned (Gateway Address):**	_ _ _ . _ _ _ . _ _ _ . _ _ _	*10.94.0.254*

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8.2 "DICOM" Configuration Parameter Definitions: (Z-ONE)

The table below provides some guidance regarding the type of information required for the DICOM configuration of the various menus ("**General**", "**Printers**", **Network Store**", "**MPPS**" and "**Worklist**") on the **z.one**.

DICOM Configuration Parameters:	Definition:
AE Title e.g., "Zonare1"	The official "name" (*Application Entity*) assigned to the Z.ONE (by the network administrator) to identify it to the network.
Compression – None – RLE Lossless – JPEG Lossy	Enables the ability to compress image files for the purpose of reducing file size and transfer times. RLE Lossless automatically reduces the size of the transferred image, yet retains all source content. Provide the highest level of image file size reduction (compression) of all the options. User selectable "Quality" setting (between 85-100%) determines resultant file size.
Date Range	Specify the number of days back (Today, 2, 7, All) that the DICOM worklist will reference scheduled examinations.
Gateway IP Address	A designated TCP/IP address (i.e 10.1.1.254) that is required in cases where the **Z.ONE** is to be connected to target devices that are outside the primary host network (FTP remote access, for example).
ICON Image	A sub-sampled (miniature size) version of the image created for each patient image on the **Z.ONE**. Options are to either *retain* or *remove* these images from DICOM image transfers to the target device. (default is "*retain*")
IP address	Internet Protocol address. A unique Internet address for devices attached to an IP network (TCP/IP network).
Keep Alive Timeout	Specify the duration (in seconds) that an established DICOM connection will be maintained, after completion of the last transfer..
Limit by Modality – None – US (ultrasound) – 50+ additional options: (see list of selections)	Filter the Worklist by modality (US, CT, MRI, et cetera). Set according to department requirements. None: Show entries for *all* modalities. US: Show entries for ***ultrasound*** exams only. The following additional modality filter (limit) settings are available for selection: Selections – AU, BI, CD, CR, CT, DD, DG, DX, ECG, EPS, ES, FID, GM, HC, HD, IO, IVUA, KO, LS, MG, MR, NM, OP, OT, PR, PT, PX, REG, RF, RG, RTDOSE, RTIMAGE, RTPLAN, RTRECORD, RWV, SM, SMR, SR, ST, TG, US, XA, XC
Log Level	Defines the level of detail information that will be displayed in the DICOM Queue.
Maximum entries cached Enter a number between 0 and 999	Set according to department requirements. A higher number provides access to more scheduled exams, but increases the time required to search for the exam of interest.
Minimum/Maximum Film Density	For defining Minimum/Maximum density of images on film. Value entered is expressed in hundredths of OD (optical density). A value entered of 150, corresponds with 1.5 OD. Typical acceptable values to be entered are 000-399,

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DICOM Configuration Parameters:	Definition:
	with 020 (for “Min”) and 300 (for “Max”) being a potential starting point.
Network Type	Allows for manual or auto setup of network speed and duplex operational state. Selections include: Auto-Negotiate, 100MB/Full-Duplex, 100MB/Half-Duplex, 10MB/Full-Duplex, 10MB/Half-Duplex
Nickname e.g., “Prep Room Printer”	An informal name to identify the device to users in the department. This name is typically assigned in the department.
Network Usage Type	Defines the interval at which DICOM images will be transferred over the network to the PACS storage device. Either immediately upon each press of STORE (“Exam in Progress”), or at the termination of the current examination (“Exam Completed”). - Exam In Progress - Exam Completed
PDU Receive/Send Size	The size (in bytes) of the basic data packets (PDU: Process Data Unit) that will be trasferred during receive and transmit operations. (default is 16384 = 16K)
Polling Interval (minutes) – None – choose minutes	The frequency of automatic updates to the worklist. A short polling interval may impact system performance. Choose a preferred interval; or choose **None** to update the worklist only on demand.
Port number	The TCP/IP port number that is being used by the DICOM device connected to the **Z.ONE**. Default port value is 104.
Photometric Interpretation	Defines the method that will be used (Grayscale, RGB color, etc.) by the receiving device (DICOM PACS system) for interpreting the different bit level values of the data, within the transferred images Selections include: - Palette Color - True Color (RGB) - Color by Pixel - True Color (RGB) - Color by Plane - Grayscale (Monochrome2)
Queue Timeout (sec)	The maximum amount of time that a DICOM job will remain active in the queue, before it times out.
Queue Start Type	Defines whether the start of jobs in the DICOM queue will be performed *automatically* or started *manually*.
Release Association	Specifies whether to release the DICOM association (communications link between the **Z.ONE** and the DICOM storage device) after each individual image is transferred or maintain it until the entire exam is completed.
Scheduled Station AE Title	Filter the Worklist by scheduled station Application Entity (AE) title. Set according to department requirements.
Station Name	The TCP/IP “*HOST*” name that will be assigned to the **Z.ONE** for identification on the local network. Should be provided by the Network Administrator.
Subnet Mask	The number of bits (within the 24-bit IP Address) that will be used for defining the “Network” portion vs. the “Host” portion.
TCP Timeout (sec)	The maximum duration (in seconds) of waiting time that will be allowed for completion of TCP transfers over the network. Set according to anticipated network type/ speed.

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8.3 Z.ONE Pre-Install Survey Form *(Sample Only)*

DICOM Connectivity Type at Customer Site: ***(Check boxes below, as applicable:*** ***Required)***

☐ **DICOM" Network Store"**	☐ **DICOM" MPPS"**	☐ **DICOM" Printer Only"**	☐ **No DICOM**

Network Setup Parameters

Level	Parameter Name	User Site Value/Setting	Default / Special Info
Required	Ethernet Media Type (Speed/Duplex)	☐ Auto-Negotiate ☐ 100MB/Full-Duplex ☐ 100MB/Half-Duplex ☐ 10MB/Full-Duplex ☐ 10MB/Half-Duplex	*Auto Negotiate*
Required	IP Address acquisition method	☐ Obtain Automatically (DHCP) ☐ Use Specified	
Required	Use Specified (IP Address, if fixed)		
Required	Gateway IP Address		
Required	Subnet Mask		

General System / DICOM Setup Parameters

Level	Parameter Name	User Site Value/Setting	Default / Special Info
User option	DICOM Application Title		*ZONARE*
User option	Station Name		*ZONARE*
User option	TCP Timeout (sec.)		*30*
User option	Queue Timeout (sec.)		*120*
User option	Queue Start Type	☐ **Automatic** ☐ Manual	*Automatic*
User option	Keep Alive Timeout (sec.)		*3600*

Printers (DICOM) Setup Parameters (if applicable)

Level	Parameter Name	User Site Value/Setting	Default / Special Info
Required	Printer Nickname		
Required	Printer AE Title		
Required	IP Address (Printer)		
Required	Port Number		*104*
User option	Max PDU Receive Size		*16384*
User option	Max PDU Send Size		*16384*
User option	Color Mode	☐ **Color** ☐ Grayscale	*Color*
User option	Number of Copies		*1*
User option	Print Priority	☐ Low ☐ **Med** ☐ High	*Med*
User option	Film Medium	☐ Paper ☐ **Blue Film** ☐ Clear Film	*Blue Film*
User option	Film Orientation	☐ **Portrait** ☐ Landscape	*Portrait*
User option	Film Size	Selections: (**8x10in**, 8.5x11in, 10x12in, 10x14in, 11x14in, 11x17in, 14x14in, 14x17in, 24x24cm, 24x30cm, A4, A3)	*8x10in*

SAMPLE

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User option	Trim	☐ **Yes** ☐ No	*Yes*
User option	Image Display Format	Selections: (**2x2**, 1x1, 1x2, 2x1, 2x3, 3x2, 3x3, 3x4, 3x5, 4x3, 4x4, 4x5, 4x6, 5x4, 5x5, 5x6, 5x7)	*2x2*
User option	Images Per Page	Selections: (1, 2, 4, 6, **9**, 12, 20, 25)	*9*
User option	Min Film Density	Typical acceptable *value range – (000-399)*	
User option	Max Film Density	Typical acceptable *value range – (000-399)*	
User option	Border Density		*Black*
User option	Empty Image Density		*Black*
User option	Magnification Type	☐ None ☐ Replicate ☐ Bilinear ☐ **Cubic**	*Cubic*
User option	Smoothing Type		

Network Store (DICOM) Setup Parameters (if applicable)

Level	Parameter Name	User Site Value/Setting	Default / Special Info
Required	Network Storage Nickname		
Required	Network Storage AE Title		
Required	IP Address (Network Storage)		
Required	Port Number		*104*
User option	Max PDU Receive Size		*16384*
User option	Max PDU Send Size		*16384*
User option	Photometric Interpretation	☐ Palette Color ☐ Grayscale ☐ True Color (RGB) – Color-By-Pixel ☐ True Color (RGB) – Color-By-Plane	*Palette Color*
User option	ICON Image	☐ Retain ICON Image ☐ Remove ICON Image	*Retain ICON Image*
User option	Object Type	☐ Store still image and cine images ☐ Store still images only	*Still and Cine Images*
User option	Release Association	☐ After storing each image in the exam ☐ After storing the entire exam	*After storing each image*

MPPS (*Modality Performed Procedure Step* - DICOM) Setup Parameters (if applicable)

Level	Parameter Name	User Site Value/Setting	Default / Special Info
Required	MPPS Manager Nickname		
Required	MPPS Manager AE Title		
Required	IP Address (MPPS Device)		
Required	Port Number		*104*
User option	Max PDU Receive Size		*16384*
User option	Max PDU Send Size		*16384*

Worklist (DICOM) Setup Parameters (if applicable)

Level	Parameter Name	User Site Value/Setting	Default / Special Info
User option	Worklist Server AE Title		*Worklist*

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Required	IP Address		
Required	Port Number		*104*
User option	Max PDU Receive Size		*16384*
User option	Max PDU Send Size		*16384*
User option	Date Range	☐ **Today** ☐ Last 2 Days ☐ Last 7 Days ☐ All	*Today*
User option	Limit By Modality	☐ **US** ☐ None Selections – Circle one if desired: (AU, BI, CD, CR, CT, DD, DG, DX, ECG, EPS, ES, FID, GM, HC, HD, IO, IVUA, KO, LS, MG, MR, NM, OP, OT, PR, PT, PX, REG, RF, RG, RTDOSE, RTIMAGE, RTPLAN, RTRECORD, RWV, SM, SMR, SR, ST, TG, US, XA, XC)	*US*
User option	Scheduled Station AE Title	☐ **Any** ☐ ZONARE	*Any*
User option	Polling Interval (Minutes)	Selections: (1, 3, **5**, 10, 15, 30, 60, Disabled)	*5*
User option	Maximum Entries Cached		*200*

Media – Removable, Setup Parameters (if applicable)

Level	Parameter Name	User Site Value/Setting	Default / Special Info
User option	**Still** Image Store: **Compression Level**	☐ **None** ☐ RLE Lossless ☐ JPEG Lossy	*None*
User option	**Still** Image Store: **Compression Quality** *(active only IF "**JPEG Lossy**" selected)*	(85% - 100% selectable)	*100 (%)*
User option	**Cine** Image Store: **Compression Level**	☐ **None** ☐ RLE Lossless ☐ JPEG Lossy	*None*
User option	**Cine** Image Store: **Compression Quality** *(active only IF "**JPEG Lossy**" selected)*	(85% - 100% selectable)	*100 (%)*
User option	**Cine** Image Store: **Duration** *(Time, in seconds, for Cine Loop Store interval)*	(0:03 – 2:00 minutes - *m:ss*)	*0:05*

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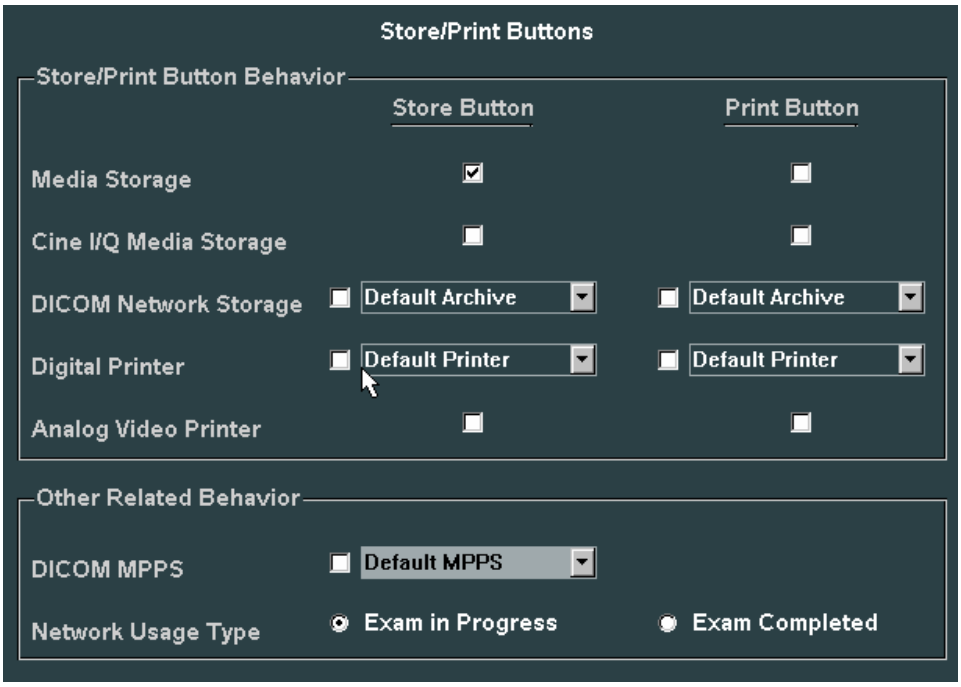
Store/Print Button – Setup



Other DICOM Related Behavior (MPPS - ***Modality Performed Procedure Step***) - Settings

Level	Parameter Name	User Site Value/Setting	Default / Special Info
User option	MPPS Destination	☐ **Disabled** ☐ Default MPPS ☐ *user config*	*Disabled*
User option	Network Usage Type	☐ **Exam In Progress** ☐ Exam Completed	*Exam In Progress*

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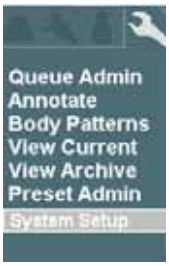
8.4 "DICOM" Configuration Procedure - Menus

NOTE: Refer to the "Survey Form" (on the previous pages), for detailed information of all the values that are offered in the **Z.ONE** menus, for selection within the various fields, in each of the following configuration screens.

- **DICOM" GENERAL" Configuration**

1. Using the page TAB button to advance menu screen to select **TOOLS** menu.

TOOLS Menu



2. Using the **Menu Control**, arrow down to backlight **SYSTEM SETUP** selection, and press the SELECT button to bring up this menu.

SYSTEM SETUP Sub-Menu

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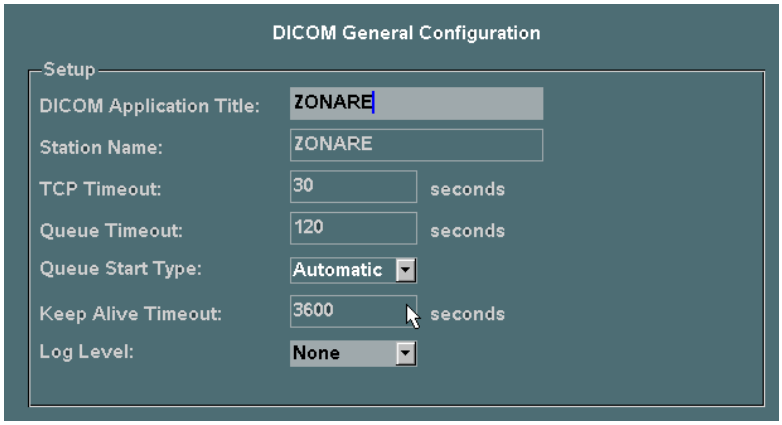
3. Within the **DICOM** selection, use the Menu Control to backlight **GENERAL** selection, and press the SELECT button to bring up this menu.

DICOM Sub-Menu

DICOM GENERAL Sub-Menu



4. Using the alpha-numeric keyboard, enter in the required **DICOM** configuration values/settings in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.

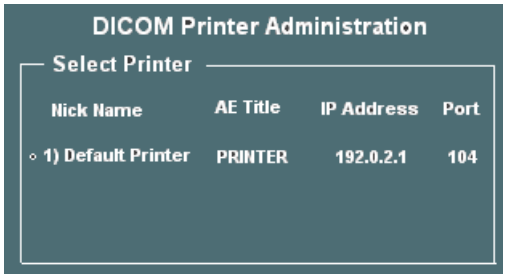
5. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

• DICOM "PRINTERS" Configuration

1. Within the **DICOM** selection, use the Menu Control to backlight **PRINTERS** selection, and press the SELECT button to bring up the **DICOM Printer Administration** menu.

DICOM Sub-Menu

PRINTER Administration Sub-Menu



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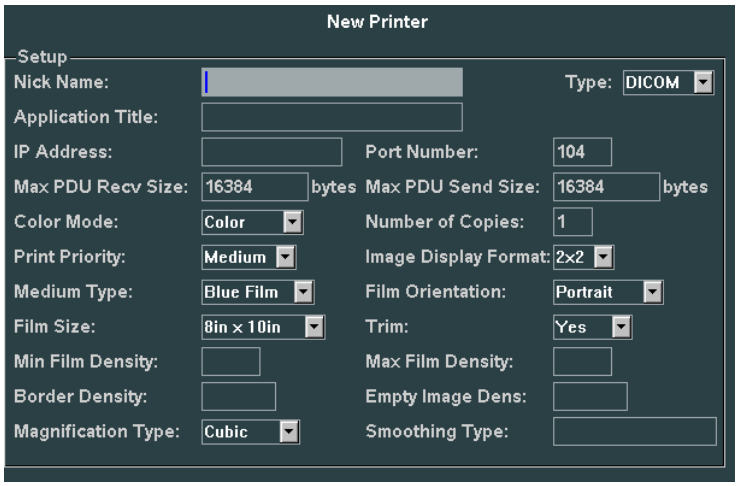
2. To create an entry for a new printer to be added to the DICOM connectivity for the Z.ONE, use the Menu Control to backlight **NEW** from the main menu, and press the SELECT button to bring up the **DICOM Printer Administration** menu.

DICOM Sub-Menu

PRINTER New/Edit Sub-Menu



3. Using the alpha-numeric keyboard, enter in the DICOM configuration values/setting in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.

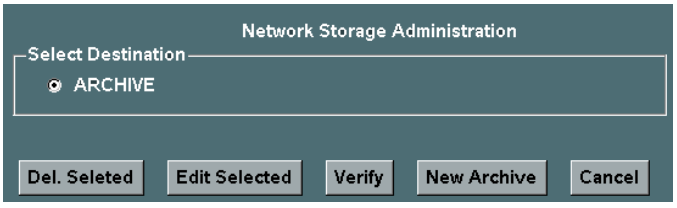
4. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

• DICOM" NETWORK STORE" Configuration

1. Within the **DICOM** selection, use the Menu Control to backlight **Network Store** selection, press Select button to bring up this menu.

DICOM Sub-Menu

DICOM NETWORK STORE Sub-Menu



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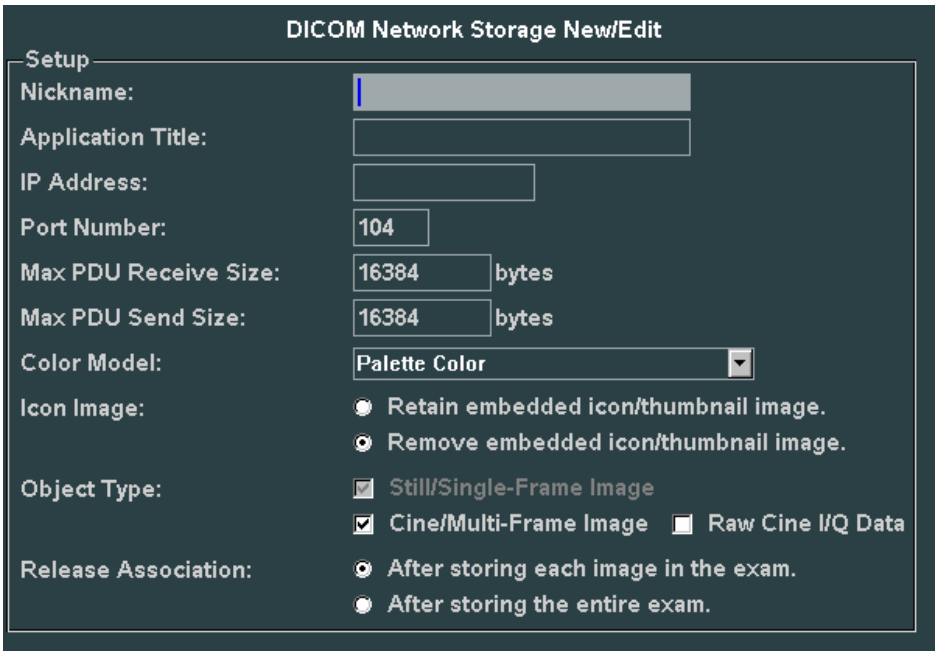
2. To add a new network store archive, select **NEW** from the main menu, to bring up the following menu.



3. Using the alpha-numeric keyboard, enter in the DICOM configuration values/setting in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.

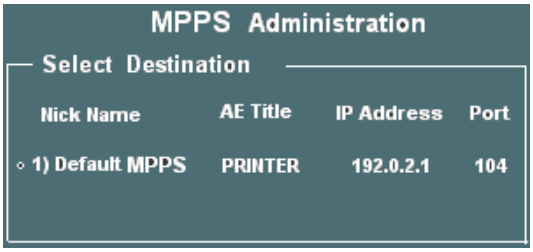
4. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

• DICOM" MPPS" *(Modality Performed Procedure Step)* Configuration

1. Within the **DICOM** selection, use the Menu Control to backlight **MPPS (*Modality Performed Procedure Step*)** selection, press **Select** button to bring up this menu.

DICOM Sub-Menu

DICOM MPPS Sub-Menu



2. To add a new MPPS destination, select the **NEW** from the main menu, to bring up the following sub-menu.

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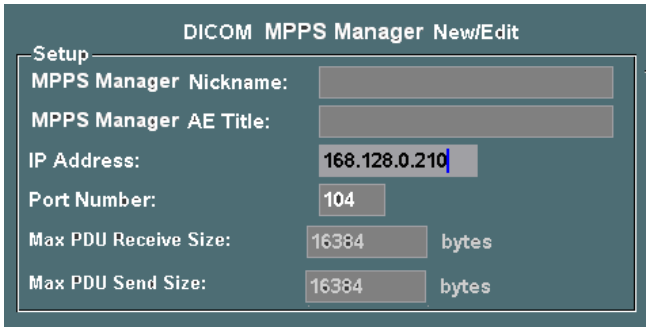


3. Using the alpha-numeric keyboard, enter in the DICOM configuration values/setting in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.

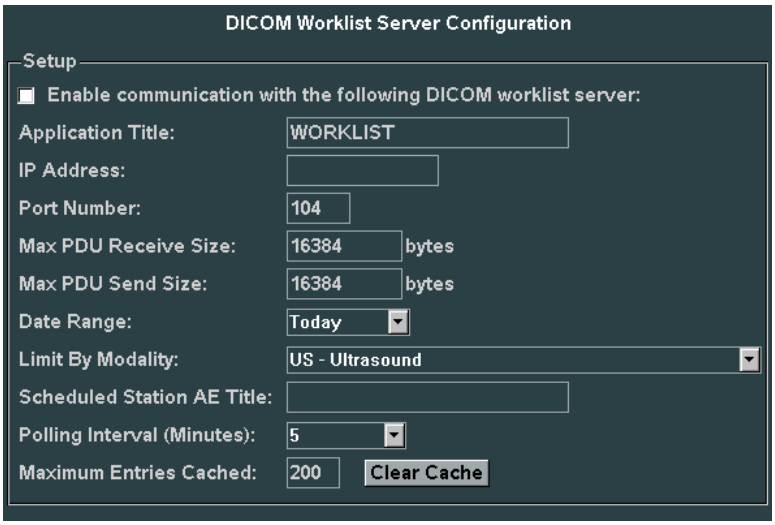
4. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

• DICOM" WORKLIST" Configuration

1. Within the **DICOM** selection, use the Menu Control to backlight **Worklist** selection, press Select button to bring up this menu.

DICOM Sub-Menu

DICOM WORKLIST CONFIG Sub-Menu



2. Using the alpha-numeric keyboard, enter in the DICOM worklist values/setting in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.

3. To save the new settings, select **APPLY** from the main menu, and press the **SET** key to save new settings.

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9 ADVANCED SYSTEM SETUP CONFIGURATION

9.1 "Security" Setup Menus

WARNING

*If the security password is lost or forgotten, there is **NO** master password available to recover system access.*

*To restore use of the **z.one** it will be necessary to perform a complete re-installation of system software. Refer to the "Advanced" Software Installation Procedure information in this manual.*

1. Using the page TAB button to advance menu screen to select **TOOLS** menu.

TOOLS Menu

2. Using the **Menu Control**, arrow down to backlight **SECURITY** selection, and press the SELECT button to bring up this menu.

SECURITY Sub-Menu

3. Select the desired level of security control, by clicking on the bullet to the left of the desired offering in the menu.

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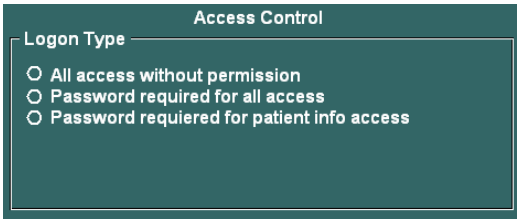
ACCESS CONTROL Sub-Menu



4. Using the **Menu Control**, arrow down to backlight **Apply** selection in the main menu, and press the SELECT button to set new security control level, and exit.

9.2 "Network" Setup

The "NETWORK" configuration menu allows for configuring the TCP/IP networking parameters that will be assigned to define the identity of the Z-ONE on the hospital's network.

5. Using the page TAB button to advance menu screen to select **TOOLS** menu.

TOOLS Menu

6. Using the **Menu Control**, arrow down to backlight **NETWORK** selection, and press the SELECT button to bring up this menu.

NETWORK Sub-Menu

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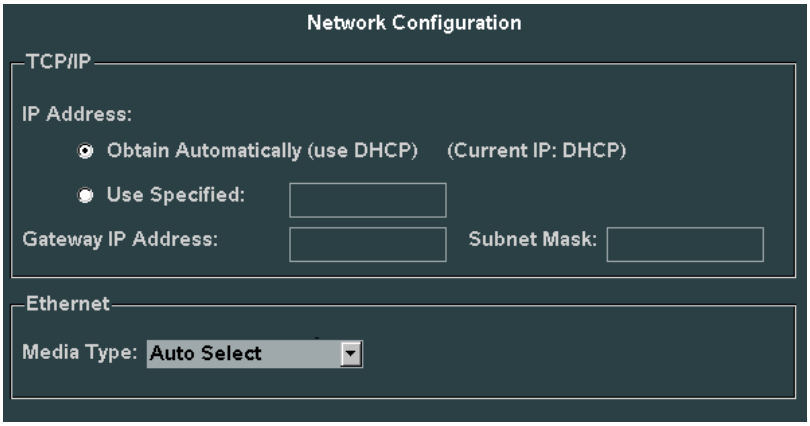

7. Using the alpha-numeric keyboard, enter in the required TCP/IP network configuration values/settings in the appropriate fields, as specified in the information previously provided in the "**Pre-Installation Site Survey Form**", by the medical facility's IT System Administrator.
8. Using the **Menu Control**, arrow down to backlight **Apply** selection in the main menu, and press the SELECT button to save the serial port configuration setup, and exit.

9.3 "Serial Port" Setup

The "SERIAL PORT" configuration menu allow for configuring the operating parameters (BAUD rate, start/stop bits, etc) applied in use of (one) the serial ports at the Rear I/O panel of the SuperCart.

The serial port(s) will be used (*in the future*) by the Operator for the purpose of outputting raw OB calculation report table data from the Z.ONE, to remote report generator devices.

1. Using the page TAB button to advance menu screen to select **TOOLS** menu.

TOOLS Menu

2. Using the **Menu Control**, arrow down to backlight **SERIAL PORT** selection, and press the SELECT button to bring up this menu.

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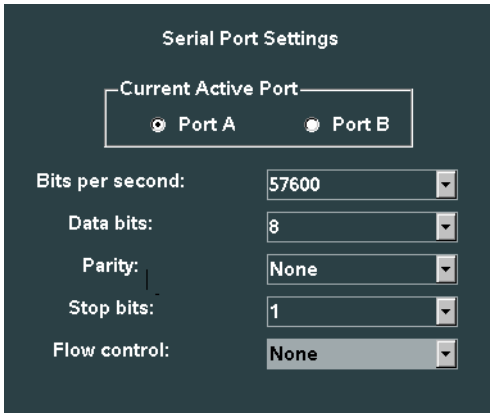
SERIAL PORT Sub-Menu



3. Select the desired serial port (A or B), and then select the proper configuration for speed and data transfer control parameters to be used.
4. Using the **Menu Control**, arrow down to backlight **Apply** selection in the main menu, and press the SELECT button to save the serial port configuration setup, and exit.

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10.1 Installing USB Memory Stick, into the Scan Engine

STEPS:

1. Ensure the Scan Engine is currently in a Power-OFF condition
2. Open the access cover door, at the rear of the Scan Engine
3. Hold the USB Memory stick properly aligned with the USB port connector on the Scan Engine. Push the USB Memory Stick gently all the way into the connector.

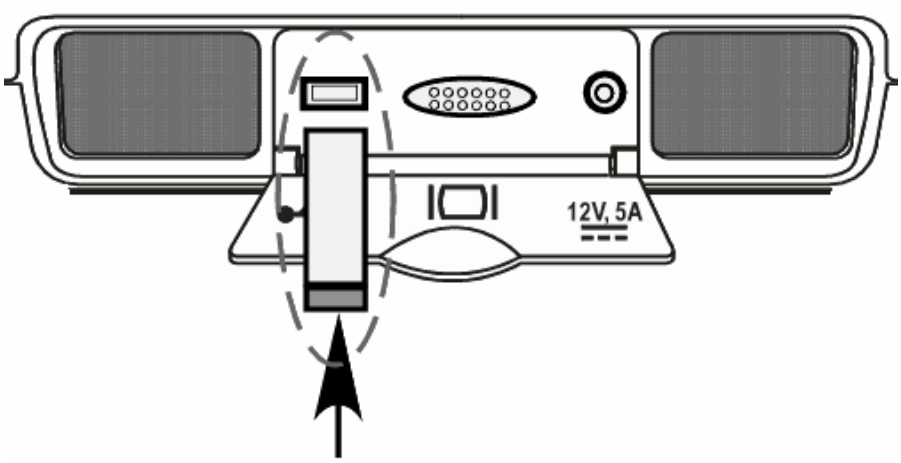

Figure 39: Installing USB Memory Stick

4. The USB Memory Stick icon displays on the right of the screen.
5. On the SuperCart: Press *Archive*.
6. On the Scan Engine: On the TOOLS tab, select *Archive*. The available memory displays on the top left of the Archive screen.

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11 FUNCTIONAL DESCRIPTIONS

11.1 Overall System

11.1.1 Features Overview

SYSTEM OVERALL:

- 64-hardware / 128-synthetic channel system
- Supports B-Mode, M-Mode, Color, Power Doppler, PW modes

SUPERCART:

- 13” full-screen LCD Display
- Full-sized alpha-numeric user keyboard
- Discrete function user controls
- Four user configurable function (F1-F4) keys
- 8-Pot TGC slider controls
- Trackball
- Integrated microphone
- Integrated stereo speakers
- External I/O device connectivity (through SuperCart dock interface)
  - S-Video in/out
  - Composite video in/out (NTSC/PAL)
  - SVGA video out
  - Stereo (L/R) audio – in/out
  - Ethernet 10/100B-T
  - Two (2) RS-232 serial ports (A/B)
  - USB 2.0 Full-speed
  - *– Future support: Parallel printer port*

SCAN ENGINE:

- 5.8” diagonal, 800 x 480 resolution, LCD Display
- Touchscreen
- Internal CompactFlash memory
- Discrete function user controls
- Two user configurable function (F1-F2) keys
- Trackball
- Integrated microphone
- Integrated stereo speakers
- Battery status indicator LEDs
- USB 2.0 Full-speed port
- +12V/6A DC power input port
- SVGA Video output port

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11.1.2 Electronics Overview (Scan Engine)

- Digitally programmable transmit control
- Pulser - Transmitter
- Analog front end
- Data converter / filters
- Pre-processing digital logic
- System control via a MPC823e Microprocessor
- DSP pre/post processing
- FPGA connectivity control logic
- Power
  - Lithium-Ion battery pack
  - Smart Battery charger with I^2C interface
  - Lithium coin-cell battery backup for RTC (Real Time Controller)
  - Pushbutton induced power-on, with software controlled shutdown
  - Power supply supervision of all supplies
  - Controlled power supply up/down sequencing

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11.2 SuperCart

11.2.1 PC Board Descriptions

1. Main/IO Board.....Zonare P/N: 80207

System Functions:

- (Main board portion)

- (+12V) Source power for charging Lithium-Ion battery, in the Scan Engine
- Power regulator for all internal DC power (+1.5V, +3.3V, +5V, +12V)
- HSSL and USB, Scan Engine<->SuperCart communication interface logic
- Processes all User Interface signals (keyboard, trackball, TGC, etc.)
- Audio/Video driver/interface logic (SVGA, S-Video, Comp Video)
- Parallel printer driver logic *(future use)*
- Dual port, RS-232, external serial logic
- USB port interface *(future use)*
- Network (10/100BaseT) interface logic
- SuperCart main control FPGA logic device

- (I/O board portion)

- Filters external Parallel Printer port drive signals *(future use)*
- Provides *Remote Expose* print command routing

Description:

The Main board and I/O board are piggybacked together to form the 80207 FRU assembly. The Main board contains the only intelligence within the SuperCart (excluding the docked Scan Engine, which is the main processor of the **z.one**), in the form of a programmable FPGA device. The FPGA device handles all data, video and signal I/O transfers within the SuperCart.

The I/O Board portion of this assembly performs analog filtering for the parallel printer port signals (future use) and contains the pathway for the remote expose trigger signal, used by video print peripheral devices.

The Main Board/IO Board FRU is a slide-in removable assembly, installed from the rear of the SuperCart. The SuperCart's rear I/O panel, where all external cable connections of video, audio, printer, and network/serial data are done, is part of this assembly.

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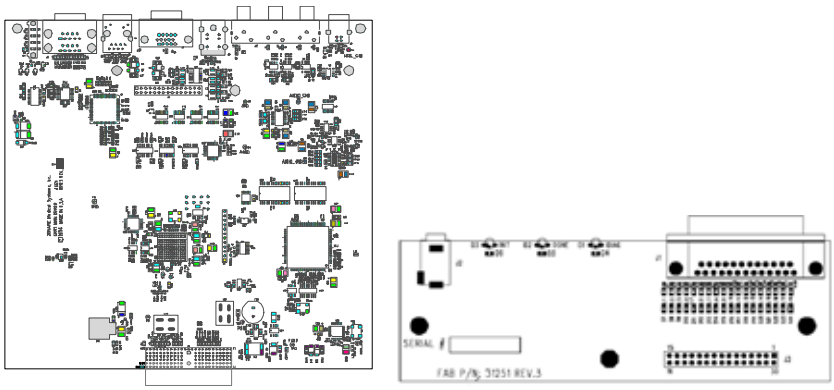


2. Backplane (Interface) Board.....Zonare P/N: 80127

System Functions:

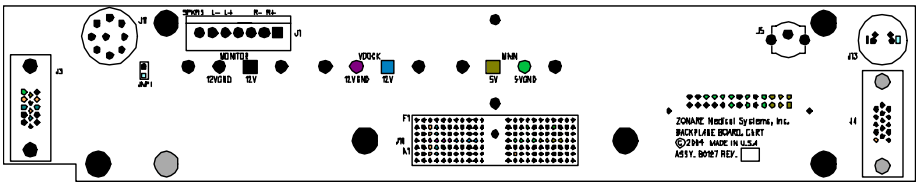
- Main electrical conduit for routing of DC power, data & control signals inside SuperCart
- Connectors, for routing of video & audio signals to LCD Display
- Connections for routing all User Interface (Keyboard, trackball, etc.) to Main Board

Description:

The Backplane board contains no active components. The Backplane board is comprised of a chassis mounted assembly that provides a series of connectors for the interconnectivity of electronic signals and voltages within the SuperCart. The Backplane board contains the multi-pin connector where the Main/I/O board assembly plugs into the SuperCart.

The following cables are connected, and carry their signals, via the Backplane board:

- HSSL (High Speed Serial Link) cable from Scan Engine Interface board
- SVGA video cable to the SuperCart LCD Display
- S-Video cable to the SuperCart LCD Display
- Composite video cable to the SuperCart LCD Display
- +12V source power to the SuperCart LCD Display
- Speaker (L/R) audio cable
- User Interface (keyboard) signal interconnect cable
- DC Power Supply distribution (+12V/20a, 12V/6a, +5V)



3. Scan Engine Interface Board .....Zonare P/N: 80136

System Functions:

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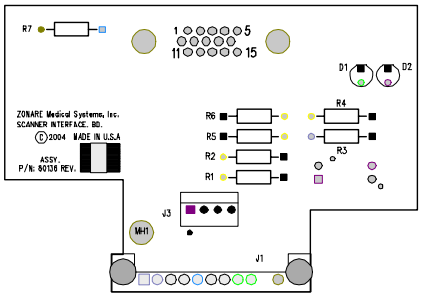
- Houses +5V Power and +12V VDock Power status LEDs (DS1, DS2)
- Contains multi-pin Scan Engine Dock Connector (HSSL, USB, VDock)
- Contains optical sensor for ***Scan Detect***
- Interface for ***Scan Engine Release*** optical sensor input

Description:

Two status LEDs, and the optical sensor for Scan Engine detection, are the primary active components on the Scan Engine Interface board. This board is mounted at the bottom of the Scan Engine pocket and contains the interface connector that's engaged with the Scan Engine's mating connector, when the Scan Engine is docked into the SuperCart.

The primary signals routed through connectors on the Scan Engine Interface board, are:

- HSSL (High Speed Serial Link) Scan Engine/SuperCart communications interface
- USB Scan Engine/SuperCart interface
- ***Scan Detect*** optical sensor input
- ***Scan Release*** optical sensor input
- +12V (VDock) voltage to Scan Engine



11.2.2 Electro and Mechanical Assemblies

1. Brake Mechanism

Description:

The front wheels on the SuperCart can be prevented from rolling, and locked in 90 degree angled detents, via the brake/lock mechanism located at the front of the SuperCart. A flexible metal cable provides a link between the push-pedal (depressed by the User) and the individual front wheel locking mechanisms.

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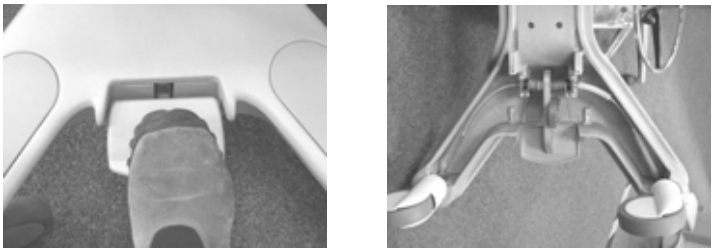

Figure 40: SuperCart: Brake Mechanism

2. Height Adjustment Mechanism

Description:

The height adjustment mechanism allows the User to adjust the vertical position of the working surface of the SuperCart, to allow comfortable viewing of the LCD display and access to the keyboard and other User controls. A plastic release lever, for the height adjustment mechanism, is located inside the right/front handle of the SuperCart.

A braided steel cable connects between the user's release handle and the activation lever of the gas shock that supports the main column of the SuperCart.

An inline barrel-type cable adjuster allows fine calibration of the release point for the handle. Removal of two screws that retain an access plate, inside the backpack door area at the rear of the system, is required to make this adjustment.

Rotating the barrel adjuster counter-clockwise (as viewed from the top) will remove slack from the cable and make the lift release occur with less lever pull.

Figure 41: SuperCart: Height Adjustment Mechanism

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12 POWER & SIGNAL DISTRIBUTION DIAGRAMS

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12.1 SuperCart AC/DC Power Distribution Diagram

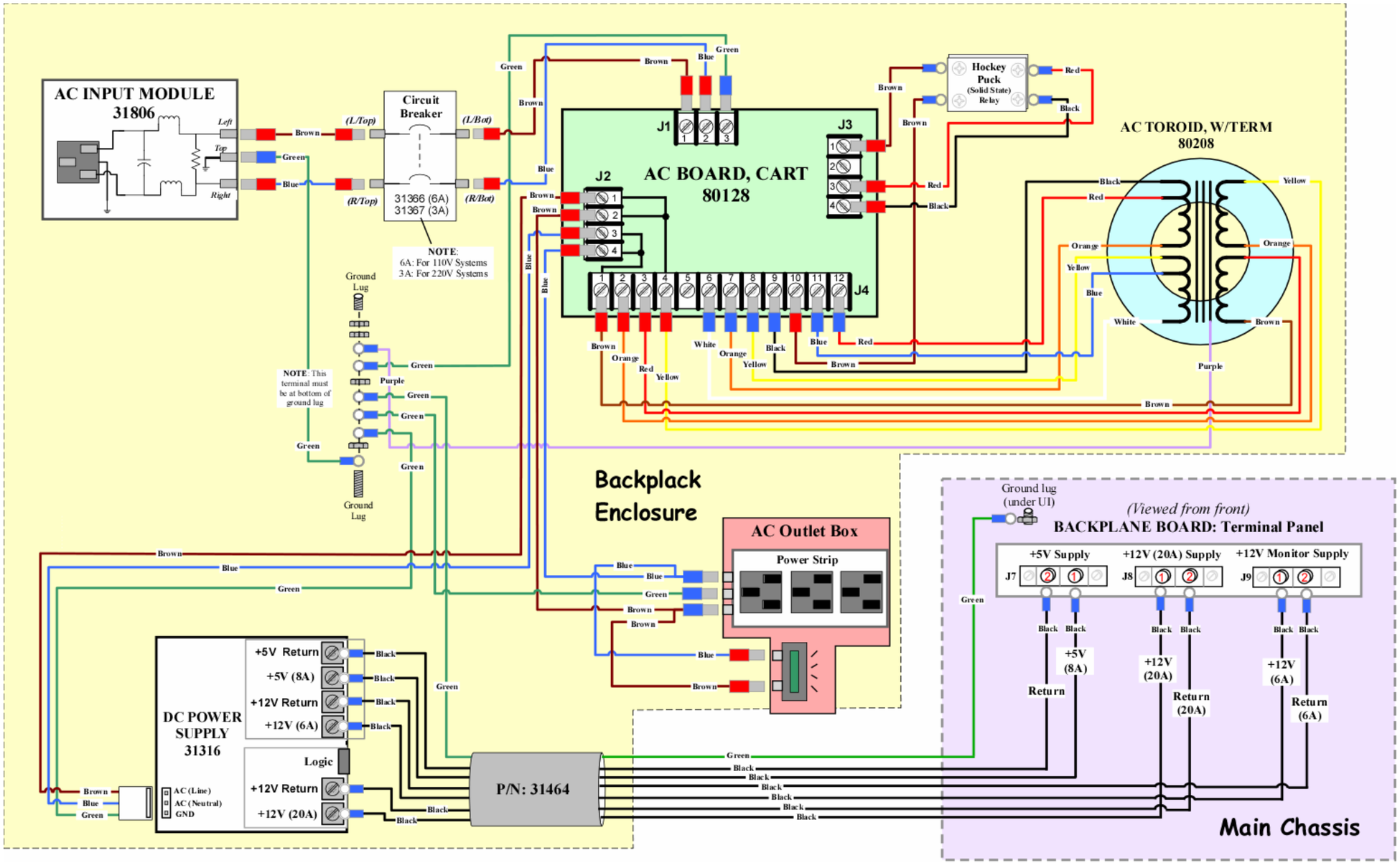

Figure 42: SuperCart: AC/DC Power Distribution Diagram

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12.2 SuperCart AC Board Schematic

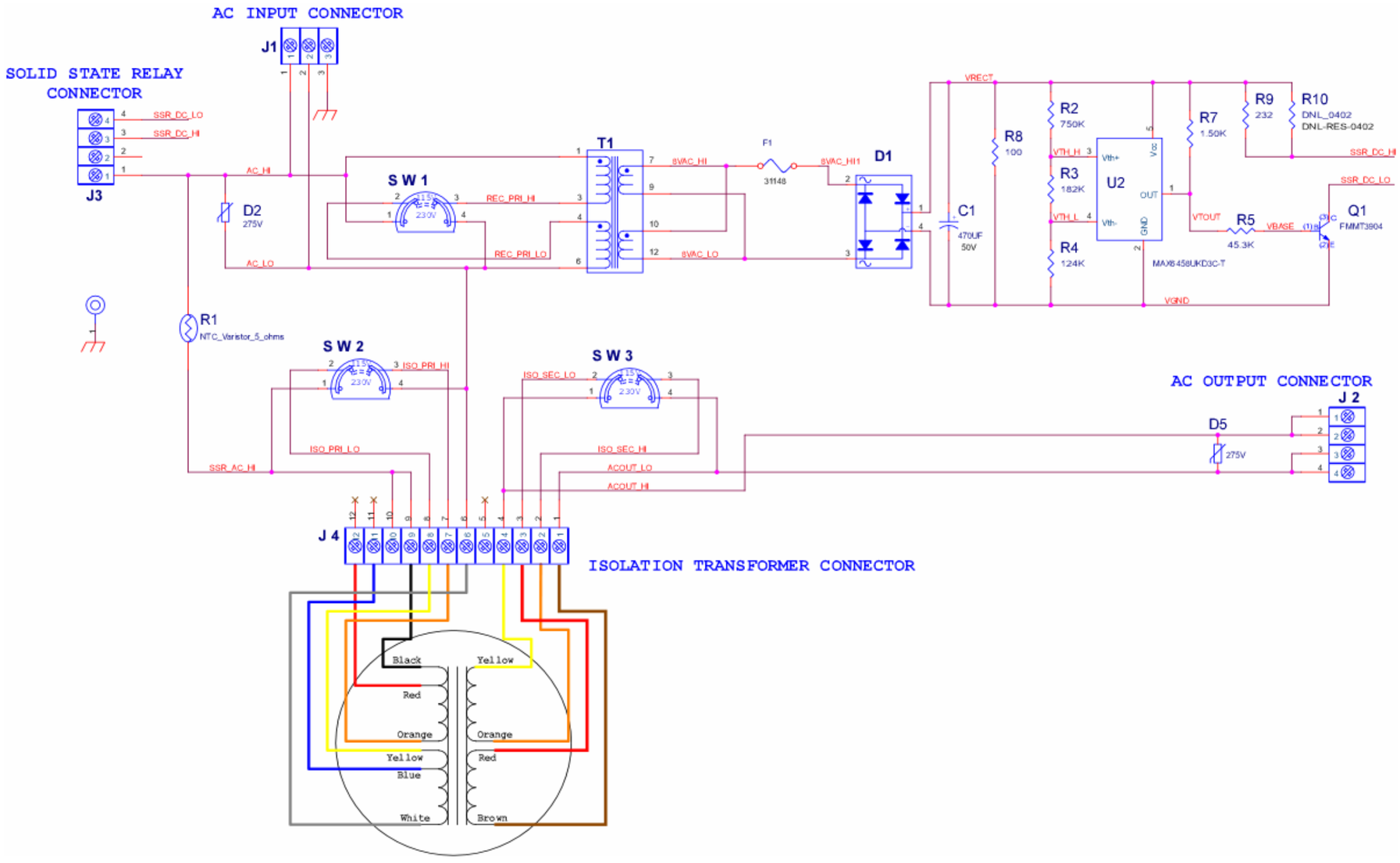

Figure 43: SuperCart: AC Board Schematic

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12.3 *mini*Cart AC/DC Power Distribution Diagram

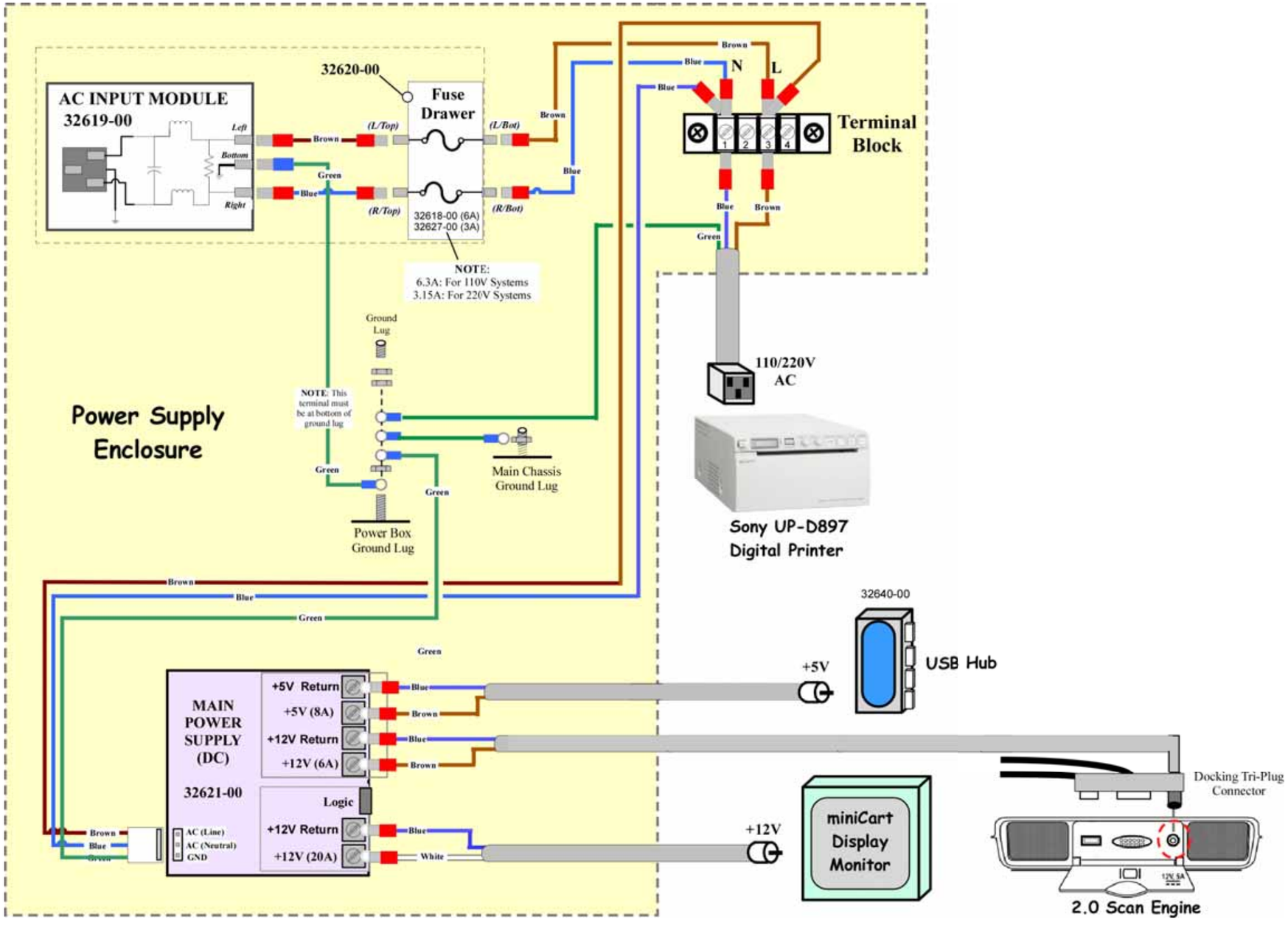

Figure 44: *mini*Cart: AC/DC Power Distribution Diagram

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13.1 z.one Overall System Block Diagram (SuperCart Configuration)

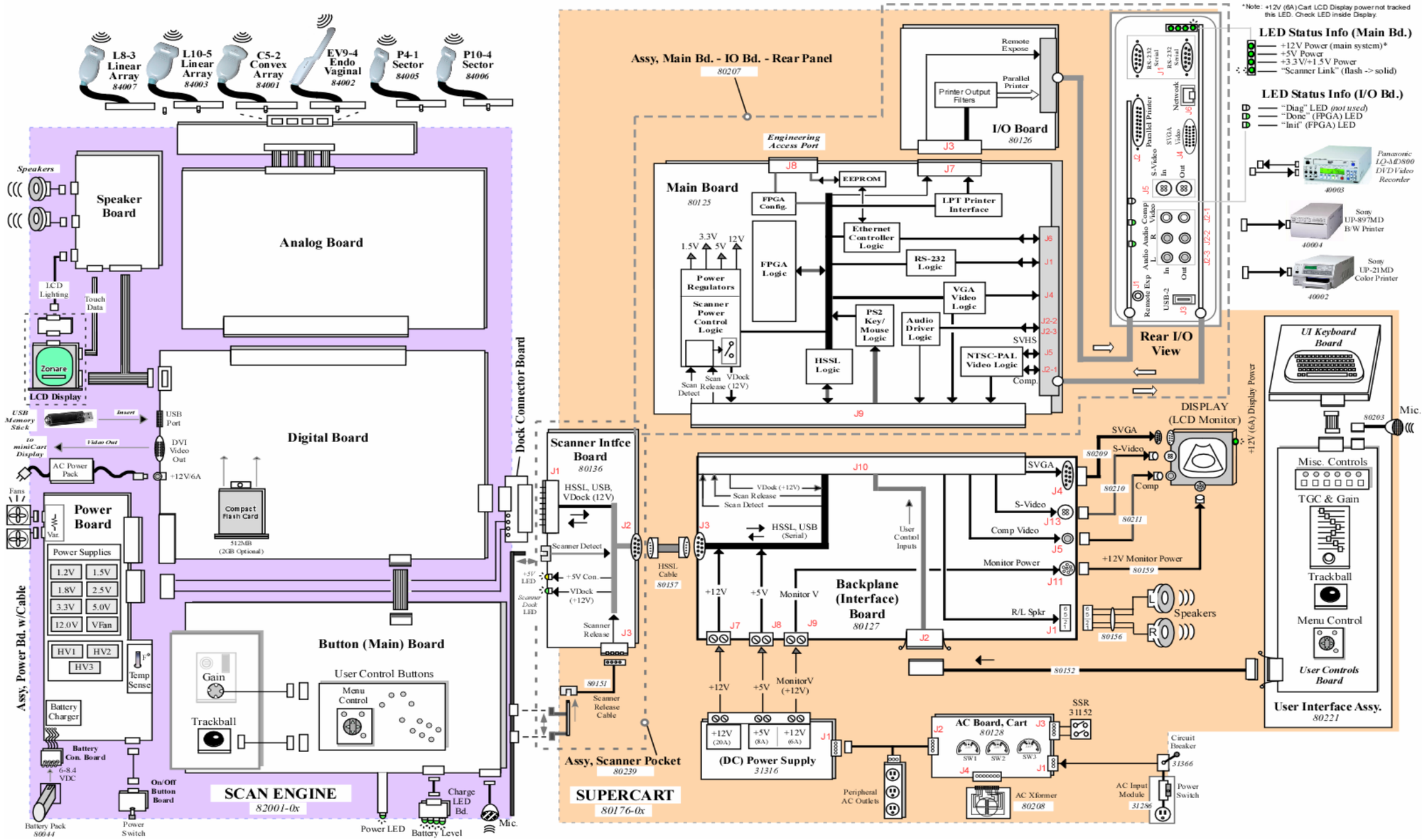

Figure 45: Overall System Block Diagram (2.0 Scan Engine & SuperCart)

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13.2 z.one Overall System Block Diagram (*mini*Cart Configuration)

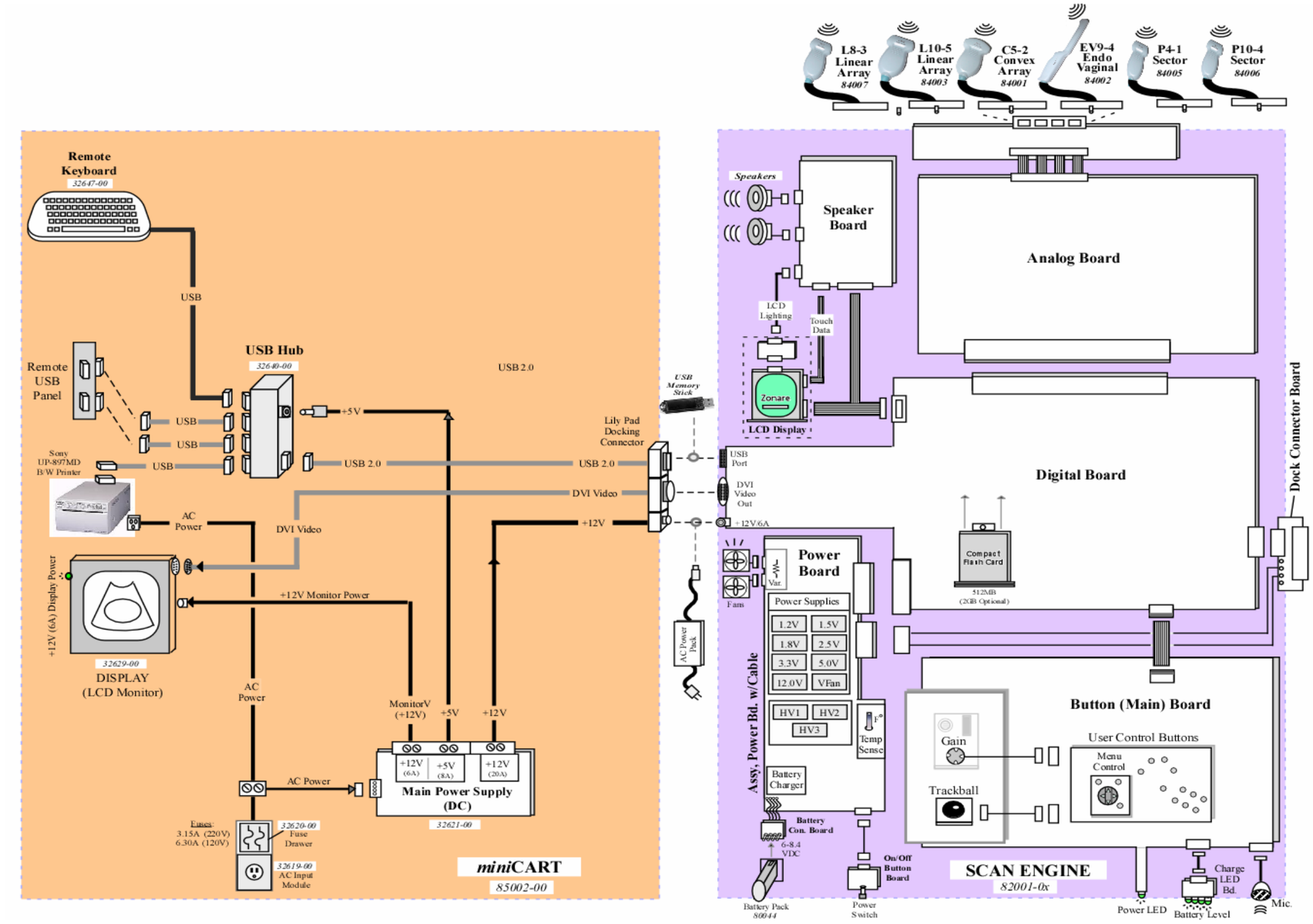

Figure 46: Overall System Block Diagram (2.0 Scan Engine & *mini*Cart)

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14 ASSEMBLY DIAGRAMS

14.1 SuperCart: AC/DC Power Component Identification

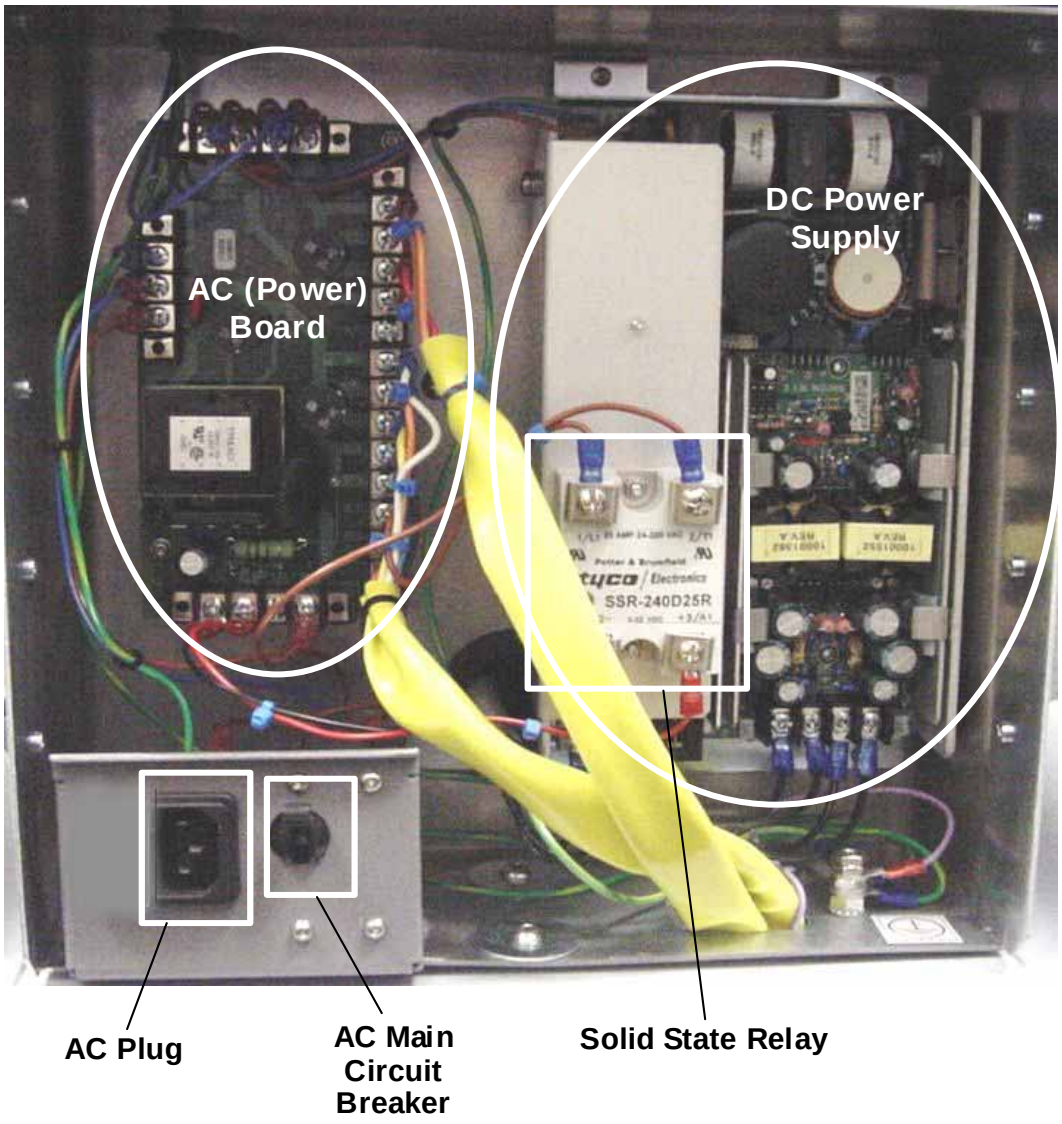

Figure 47: SuperCart: AC/DC Component Location Diagram

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15 PERIPHERALS

15.1 SONY UP-897MD B/W Printer

15.1.1 Installation Notes

In addition to the device itself, installation of the Sony UP-897MD B/W Printer on the **Z.ONE** utilizes an "Installation Kit". The contents of the kit includes: the mounting hardware, power and video cables, and installation instructions. The part numbers to support this device are:

- **40004** ..... SONY UP-897MD Black & White Printer
- **80248** ..... SONY UP-897MD Mounting Kit (Hardware, Cables, Tools)
    - **80028** ..... Cable Assembly, Supercart to B&W Video Printer
    - **30223**..... Grommet 11/16" Inner Diameter
    - **30238**..... Grommet 2-1/8" Inner Diameter
    - **31884**..... Printer Bracket
    - **30808**..... Qty: 4 Panhead Screw M3 x 12
    - **31913**..... Qty: 2 Button Hex Head Screw M6 x 12
    - **30080**..... Philips Screwdriver
    - **30081**..... T-Handle Hex Driver, 4mm

CAUTION

- *AC power for all peripheral devices connected to the Z.ONE, must utilize the power cord provided by ZONARE, and connected ONLY to the isolated outlets on the AC Outlet Box, located inside the backpack of the SuperCart.*

15.1.2 Installation Procedure

STEPS:

1. Remove the printer, all installation hardware, tools, and cables from their packaging.
2. Following the steps below, using the front panel display menu and **Jog Dial** control, configure the initial user settings on the UP-897MD printer to match those shown in Figure 1, on the following page.

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3. To bring up the setup MENU, “Press” the **jog dial** control (labeled “PUSH ENTER”).

4. Use your finger to “Roll” the **jog dial** control until the desired setting for configuration is shown in the display window.

5. “Press” the **jog dial** control to select the offered setting for modification.

6. “Roll” the **jog dial** control until the desired value is displayed in the window.

7. “Press” the **jog dial** control to store the displayed value as the new setting.

8. Repeat the above “Roll”/”Press” steps for configuring each of the remaining user settings into the UP-897MD.

   IMPORTANT: To SAVE all of the newly configured settings, it is necessary to do the following steps:

9. “Roll” the **jog dial** until “**SAVE**” is displayed in the setup menu window.

10. “Press” the **jog dial** control, and then “Roll” it to select which one of three possible user setup types (1, 2 or 3) you wish to save.

11. “Press” the **jog dial** to save the desired user settings type

12. To manually exit out of the setup MENU, “Roll” the **jog dial** until “**BACK**” is displayed in the setup menu window, and then “Press” the **jog dial**.

    NOTE: The setup menu will exit, and automatically return to the normal “Ready” printer state, when no new user actions are made on the **jog dial** for approximately 20 seconds.

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#	Setting Name	Description	Zonare Recommended Value
1	AGC	Automatic Gain Compensation	OFF
2	ASPCT	Aspect Ratio	4:3
3	BEEP	Audible Tone	ON
4	*CLEAN*	*Initiate head cleaning operation*	*n/a – control action in menu*
5	COLOR	Input video type (B/W, Color)	OFF
6	DIR	Direction (start top or bottom, for printing)	NORMAL
7	FEED	Added gap between prints	ON
8	GAMMA	Gamma curve (print density)	TONE4
9	IMAGE	Positive or Negative printout	POS1
10	INFO	Printing of user settings on prints	OFF
11	INTRT	Interruption: Allows print stoppage	OFF
12	*LOAD*	*Loads stored settings 1, 2 or 3 into use*	*n/a – control action in menu*
13	MEDIA	Paper type	HG
14	MEMRY	Frame or Field capture	FRAME
15	*MENU*	*Prints out current user settings to paper*	*n/a – control action in menu*
16	MULTI	Number of prints (1 or 2) per sheet	SINGLE
17	PAGE	*Page select to print from memory (1-10)*	*n/a – control action in menu*
18	QTY	Number of copies to print	1
19	*SAVE*	*Saves settings (as user 1, 2 or 3)*	*n/a – control action in menu*
20	SCALE	Printed image enlarge/reduction	1.0
21	SCAN	Width of Scan (Normal, WD1, WD2)	NORMAL
22	SFT. H	Horizontal positioning adjust	0
23	SFT. V	Vertical positioning adjust	0
24	SHARP	Sharpness: Image tuning (1-15)	4
25	SIDE	Image rotation (Up or 90 degrees)	SIDE
26	SPEED	Print speed	NORMAL
27	VIDEO	Video OUT processing control	EE

Figure 48: Menu Settings (UP-897MD)

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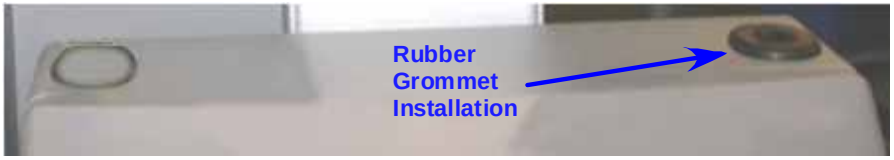
SPECIAL NOTES:

*For all installations where the resolution of the B/W image, and clarity of text information is of primary importance (most all cases) a video input selection (as specified in the table above), with the "***COLOR***" function configured as* **OFF**. *The one compromise will be a slightly "blocky" appearance for the Color flow in the ROI.*

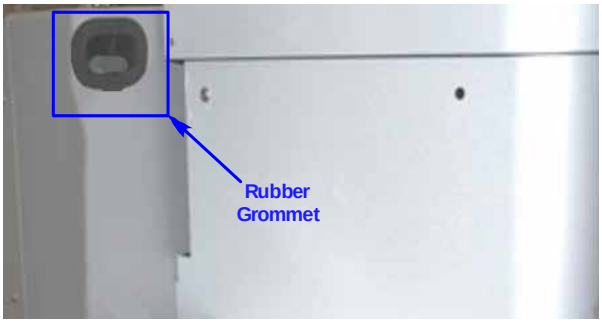
*In special cases where this slight "blockiness" of the Color Flow image is unacceptable, and there is a willingness to accept a reduced resolution within the B/W image and text, the "***COLOR***" function should be configured as* **ON**.

---

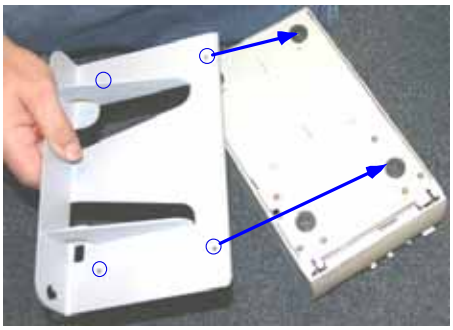
13. Install cable exit port rubber grommet (30223) in the following location, at the top/right of the backpack (as viewed from the rear).



14. Install the cable inlet port rubber grommet (30238) in the hole in the sheet metal, at the left/front (as viewed from front of system) of the backpack.



15. Using the Philips screwdriver (provided in the kit), remove the four screws that retain the plastic feet to the bottom of the UP-897MD printer, but **DO NOT** remove the rubber feet from to the base of the printer.
16. Lay the printer mounting bracket (31884) against the bottom surface of the printer (as shown), aligning the holes in the plate with the four feet on the printer.



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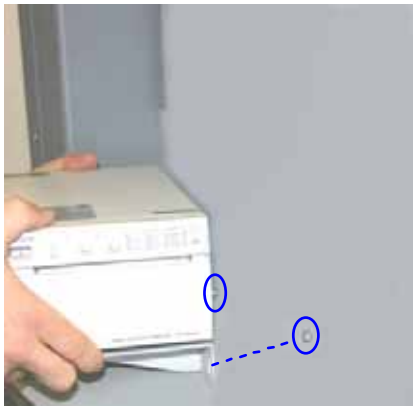
17. Install the four longer screws (30808, provided in the kit), through the holes in the mounting bracket and into the threaded feet mounting holes in the printer.
18. Using the 4mm Allen driver tool (provided in the kit), partially thread the two (2) button-head Allen mounting plate retaining screws (31913) into the corresponding holes on the LEFT side of the support frame of the SuperCart.

    Note: Leave the screws partially loose, to allow clearance for thickness of mounting plate.

19. Install the assembly to the chassis of the SuperCart, by aligning the large openings in the slotted holes of the mounting bracket with the screw heads, and then slipping the bracket downwards to lock it in place.



20. Using the 4mm Allen tool provided, fully tighten the two (2) retaining screws.
21. Connect the BNC Male-to-Female 90-Degree adapter, to the "***VIDEO IN***" connector on the rear panel of the UP-897MD printer, and connected the ***"Printer Video-In"*** mating end of the BNC cable to the adapter.

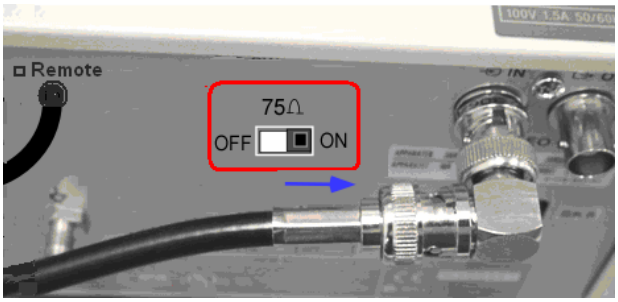


Figure 49: UP-897MD Rear Panel View

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- Ensure the 75 Ohm termination switch is in the "**ON**" (to the ***right***) position (as shown above).

22. Using the remaining individual cables contained in the B/W Printer Cable Harness Assembly (80028), connect the AC power and ***"Printer Remote-In"*** cables to the corresponding connectors on the back of the Sony printer (as shown in the following figure).

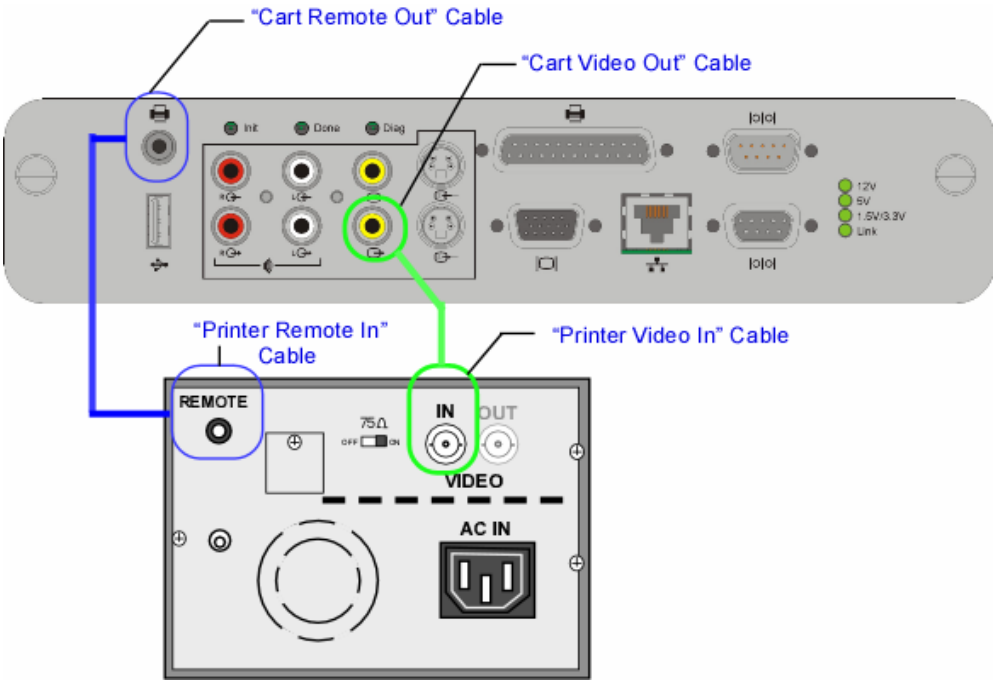
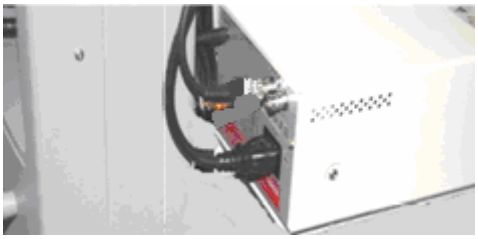


Figure 50: Cable Connections (UP-897MD)



23. Route the cable harness vertically upwards towards the access hole on the top/left side of the backpack.

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24. Route all the cables in harness through the rubber grommet in the horizontal facing access hole (as shown in the following figure), and into the backpack storage area.

25. Connect the AC power cable for the printer to one of the open receptacles on the AC Accessory Box, inside the backpack.

26. Ensure the AC power cable is routed to the far LEFT, and upward, to allow adequate clearance with the extended gel bottle holder (on the inside of the rear door of the Backpack), when the door is closed.
27. Route the ***"Cart Video Out"*** cable and ***"Cart Remote Out"*** cables out of the exit port at the top/right (as viewed from the rear) of the backpack, extending the cable far enough that the large zip-tie is just beyond (and resting on) the rubber grommet (as shown in the following figure).

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28. Connect the ***"Cart Video-Out"*** and ***"Cart Remote-Out"*** cables to the corresponding connectors (as shown in the following figure) on the Rear I/O panel of the SuperCart.

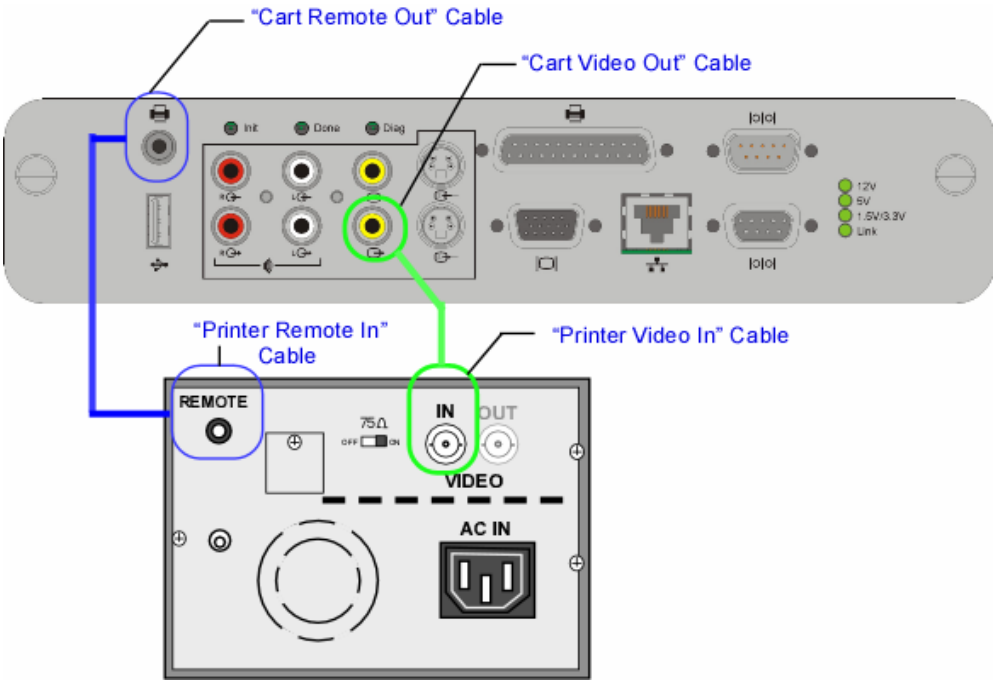

Figure 51: Cable Connections (Cart Rear I/O)

Print Button Configuration (*Trigger*)

1. Access the Print/Store Button configuration screen, using the path

   System Setup->Archive->Print/Store

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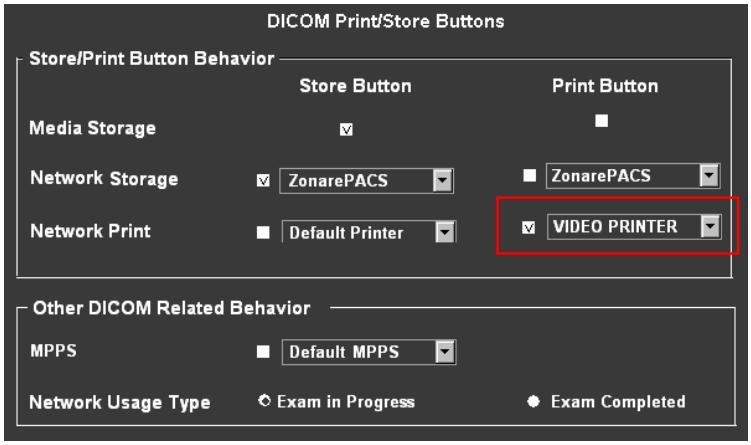

2. Under the "**Network Print**" function for the "Print Button", check the box to the left of the drop-down menu, enable this function
3. In the drop-down menu for this function, select the "***VIDEO PRINTER***" option.
4. Select "APPLY" from the main menu, to save the setting.

Print Verification

1. Power on the Cart, Z.ONE, and the UP-897MD, and connect a transducer.
2. **FREEZE** the image. Verify a printed image is produced when the "**Print**" key on the SuperCart is depressed.

NOTE: *Refer to the SONY UP-897MD Operators Manual, for detailed information on proper operation of this device.*

NOTE: *Refer to the SONY UP-897MD Operators Manual, for detailed information on proper operation of this device.*

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15.2 PANASONIC LQ-MD800 Video Recorder (DVD)

15.2.1 Installation Notes

In addition to the device itself, installation of the Panasonic LQ-MD800 DVD Video Recorder on the **Z.ONE** utilizes an "Installation Kit". The contents of the kit includes: the mounting hardware, power and video cables, and installation instructions. The part numbers to support this device are:

- **40003** ..... Panasonic LQ-MD800 Video Recorder
- **80005** ..... Panasonic LQ-MD800 Video Recorder Mount Kit (Hardware, Cables, Tools)

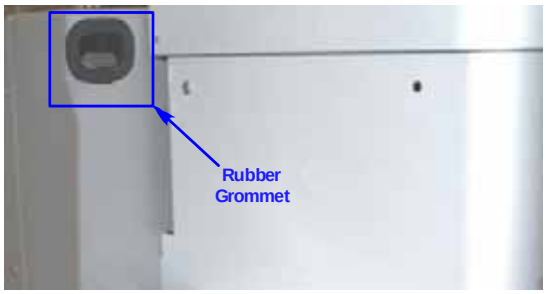
CAUTION

- *AC power for all peripheral devices connected to the Z.ONE, must utilize the power cord provided by ZONARE, and connected ONLY to the isolated outlets on the AC Outlet Box, located inside the backpack of the SuperCart.*

15.2.2 Installation Procedure

STEPS:

1. Remove the video recorder, all installation hardware, tools, and cables from their packaging in the kit.
2. Install the cable inlet port rubber grommet (30238) in the hole in the sheet metal, at the left/front (as viewed from front of system) of the backpack.



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3. Lay the DVD recorder on its side (as shown), with the weldment mounting bracket (31887) positioned facing the bottom surface of the LQ-MD800, and so that the holes in the plate align with the four threaded holes in the DVD recorder.

4. Using the Philips screwdriver (provided in the kit), install the four M8 pan-head screws (30889) with captive lock washer, through the holes in the weldment mounting bracket and into the mating holes in the DVD recorder.
5. Using the 4mm allen driver tool (provided in the kit), partially thread the three (3) button-head allen mounting plate retaining screws (31913), with captive lock washers, into the corresponding holes on the left side of the support frame of the SuperCart.

   Note: Leave the screws partially loose, to allow clearance for thickness of mounting plate.

6. Install the assembly to the chassis of the SuperCart, by aligning the large openings in the slotted holes of the mounting bracket with the screw heads, and then slipping the bracket downwards to lock it in place.

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Figure 52: LQ-MD800 Installation

7. Fully tighten the three (3) retaining screws.

Figure 53: LQ-MD800 Final Mounting

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8. Using the individual cables contained in the DVD Cable Harness Assembly (80038), connect the audio, video, and AC Power cable to the corresponding connectors on the back of the DVD recorder (as shown in the bottom half of Figure 5)

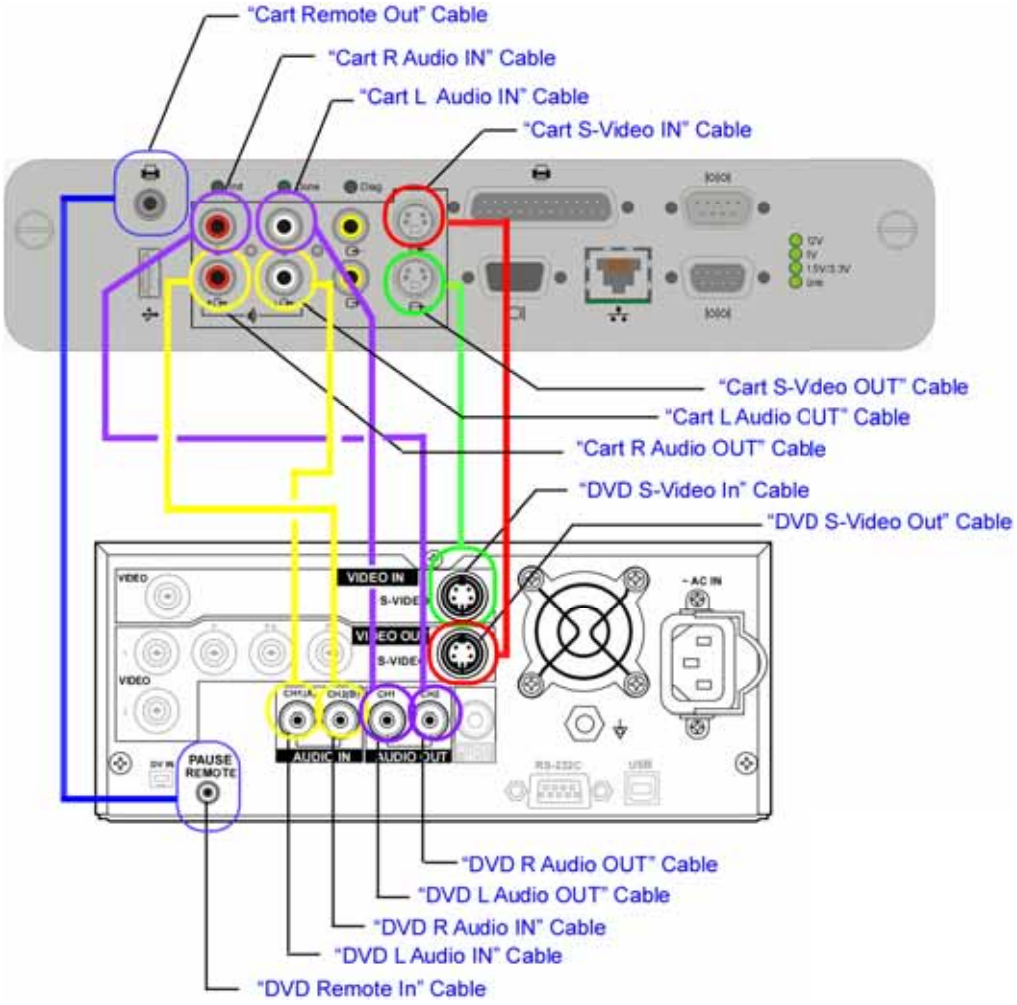
"Cart Remote Out" Cable
"Cart R Audio IN" Cable
"Cart L Audio IN" Cable
"Cart S-Video IN" Cable
"Cart S-Vdeo OUT" Cable
"Cart L Audio CUT" Cable
"Cart R Audio OUT" Cable
"DVD S-Video In" Cable
"DVD S-Video Out" Cable
VIDEO IN
AUDIO IN
AUDIO OUT
PAUSE REMOTE
"DVD R Audio OUT" Cable
"DVD L Audio OUT" Cable
"DVD R Audio IN" Cable
"DVD L Audio IN" Cable
"DVD Remote In" Cable

Figure 54: Cable Connections Diagram (LQ-MD800)

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9. Route the cable harness vertically upwards towards the access hole on the top/left side of the backpack.
10. Route the cables through the rubber grommet in the horizontal facing access hole (located on the left/front side of the backpack sheet metal) and into the backpack storage area.

11. Connect the AC power cable for the DVD Recorder to one of the open receptacles on the AC Accessory Box, inside the backpack.

12. Ensure the AC power cable is routed to the far LEFT, and upward, to allow clearance with the extended gel bottle holder (on the inside of the rear door of the Backpack), when the door is closed.
13. Route the remaining cables out through the top/left (as viewed from the rear) access hole on the backpack, directing them towards their mounting point on the Rear I/O panel of the SuperCart.
14. Extend the cables far enough for the large zip-tie to be outside of the hole in the backpack.

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15. Using the split opening, slip the exit port rubber grommet (30223) around the cable harness (just below the large tie wrap), and then install the grommet in the sheet metal of exit hole at the Top/**LEFT** of the backpack (as shown in Figure 9).

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16. Connect the other end of the seven (7) cables to the corresponding connectors on the Rear I/O panel of the SuperCart (as shown in the top half of Figure 10).

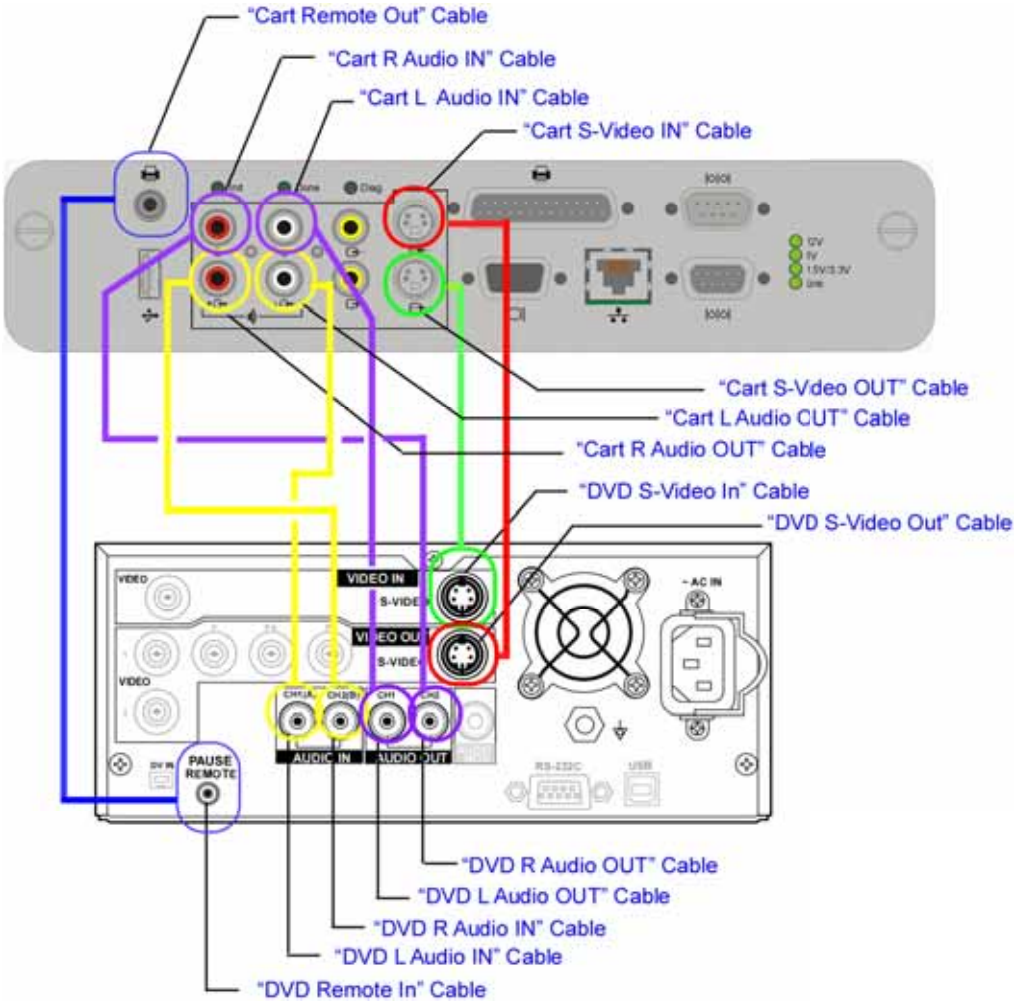

Figure 55: Cable Connections Diagram (Cart Rear I/O)

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17. Power on the **Z.ONE** and the LQ-MD800, and verify a printed image is produced when the ***"Print"*** key on the SuperCart is depressed.

NOTE: *The "FREEZE" key must be pressed on the* ***Z.ONE****, to stop live imaging, in order for the remote print trigger signal to be produced.*

18. Create a recording on the LQ-MD800, with the **Z.ONE** in live "**PW**" (Doppler) mode, while creating a Doppler audio signal (by either scanning an actual blood flow interface, or making gentle hand movements on the surface of the transducer).

19. Using the "Ext Video" key

to enable input from the DVD recorder to be displayed on the SuperCart's Barco LCD monitor, playback a loop of video from the LQ-MD800, and verify both video and audio function properly.

NOTE: *Refer to the Panasonic LQ-MD800 Operators Manual, for detailed information on proper operation of this device.*

15.3 SONY UP-21MD Color Printer

15.3.1 Installation Notes:

In addition to the printer device, the installation of the Sony UP-21MD Color Printer on the **Z.ONE** utilizes an "Installation Kit". The kit includes: the mounting hardware, AC power and video cables, required tools, and installation instructions. The part numbers to support this installation are listed above.

CAUTION

- *AC power for all peripheral devices connected to the Z.ONE, should utilize the power cord provided by Zonare, and be connected ONLY to the isolated outlets on the AC Outlet Box, located inside the backpack of the SuperCart.*

15.3.2 Installation Procedure:

Initial Mounting and Basic Setup

STEPS:

1. Power off the Scanner and Cart.

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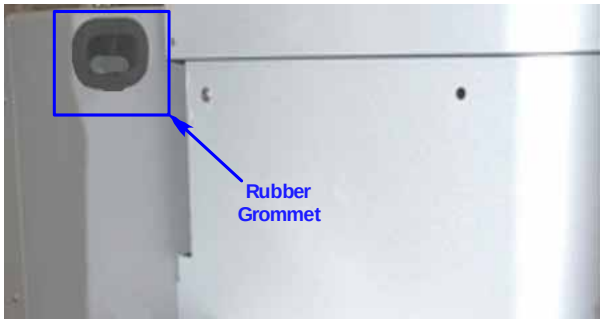
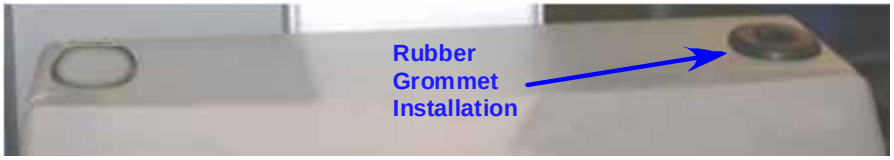
2. Remove the Sony UP-21MD Color Printer, accessories, and cables from their packaging.
3. Install the rubber grommet (30238) in the hole in the sheet metal, at the left/front (as viewed from front of system) of the backpack.



4. Install cable exit port rubber grommet (30223) in the following location, on the top/**right** of the backpack (as viewed from the rear of the system).



5. Lay the printer mounting bracket (30595) against the bottom surface of the printer (as shown), aligning the four (4) holes in the plate with the four threaded mounting holes on printer.

6. Using the Philips screwdriver (provided in the kit), install the four (4) Philips-head screws (also provided in the kit), through the holes in the mounting bracket and into the threaded mounting holes in the bottom of the printer.
7. Using the 4mm Allen driver tool (provided in the kit), partially thread the three (3) button-head Allen mounting plate retaining screws (31913) into the corresponding holes on the LEFT side of the support frame of the SuperCart.

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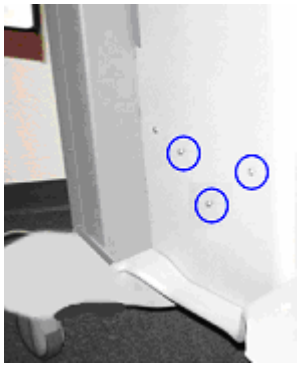
Note: Leave the screws partially loose, to allow clearance for thickness of mounting plate.



8. Install the assembly to the chassis of the SuperCart, by aligning the large openings in the slotted holes of the mounting bracket with the screw heads, and then slipping the bracket downwards to lock it in place.

9. Using the 4mm Allen tool provided, fully tighten the three (3) retaining screws.
10. Route all cables in the harness through the previously installed rubber grommet in the access hole (located on the left/front side of the backpack), and into the backpack storage area. (Note: The images show Orange colored cable ties for clarity. Cables will be supplied with Black colored ties.)

20. Route the ***"Cart S-Video Out"*** and ***"Cart Remote Out"*** cables through the rubber grommet, and out of the exit port at the top/right (as viewed from the rear) of the backpack.

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21. Extend the cables far enough for the large zip-tie to just rest on the top surface of the rubber grommet (as shown in Figure 4).

WARNING

To maintain required grounding safety on the Z.ONE, the UP-21MD MUST have its AC Power Cable connected to the AC Outlet Box inside the backpack of the SuperCart (NOT directly to an AC wall outlet).

11. Connect the AC power cable to the rear panel power plug of the UP-21MD labeled “AC IN.”
12. Connect the AC power cable for the UP-21MD to one of the open receptacles on the AC Accessory Box, inside the backpack.

13. Ensure the AC power cable is routed to the far LEFT, and upward, to allow clearance with the extended gel bottle holder (on the inside of the rear door of the Backpack), when the door is closed.

Printer Configuration Menu Viewing – Temporary Cabling Setup

NOTE: *The Sony UP-21MD has three different types of video input connectors on the rear panel. In order to configure the UP-21MD for using the “S-Video” selection (that will be used in this Z.ONE configuration) it will be necessary to the internal setup menu of the Sony printer view (on the Z.ONE’s Barco display). This will require **temporarily** connecting the S-Video cable provided in the installation kit, to provide a S-Video “Out” from the printer, to a S-Video “In” on the SuperCart.*

Once this internal setup menu has been accessed for configuring of the video input source, the S-Video cable will be moved to the normal connections used for print operations.

STEPS:

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22. Temporarily connect the ***"Printer S-Video In"*** cable, contained in the installation kit, to the S-Video "Output" (Bottom) connector, at the rear of the Sony Color Printer.
23. Temporarily connect the ***"Cart S-Video Out"*** cable to the S-Video "IN" (Top) connector on the Rear I/O panel of the SuperCart.

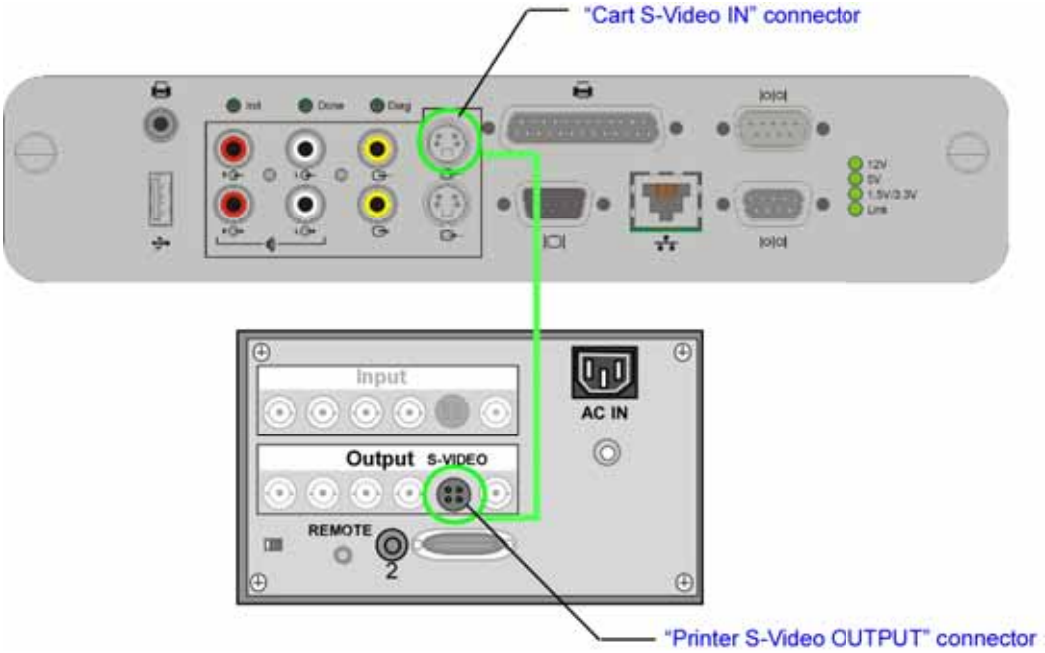

Figure 56: Temporary Setup – Sony Menu Viewing Cabling Connections

24. Power "On" the Scanner, SuperCart, and Sony UP-21MD Color Printer.
25. Toggle the **EXT VID** key on the SuperCart keyboard, until the Sony UP-21MD's video output is selected as the source for video input (and displayed) on the Barco monitor.
26. Press the **MENU** button on the front of the UP-21MD to view the main menu.
27. Using the Left/Right (◁ ▷) arrow buttons, toggle across to heading in the menu, to select the **INPUT SETUP** function (item highlighted in green).
28. Use the Up/Down (▽ △) arrow buttons to select the **INPUT SEL** function from this menu.

INPUT SEL: V/SV/RGB

29. Use the Left/Right (◁ ▷) arrow buttons to highlight (in green) the "**SV**" (for S-Video) selection from this menu.
30. Printer configuration complete.

Printer – Z.ONE Final Setup Cabling

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31. Connect the ***"Cart Remote Out"*** cable to the corresponding connector on the Rear I/O panel of the SuperCart, and move the ***"Cart S-Video Out"*** cable to the S-Video **OUT** (Bottom) connector (both as shown in the figure below).

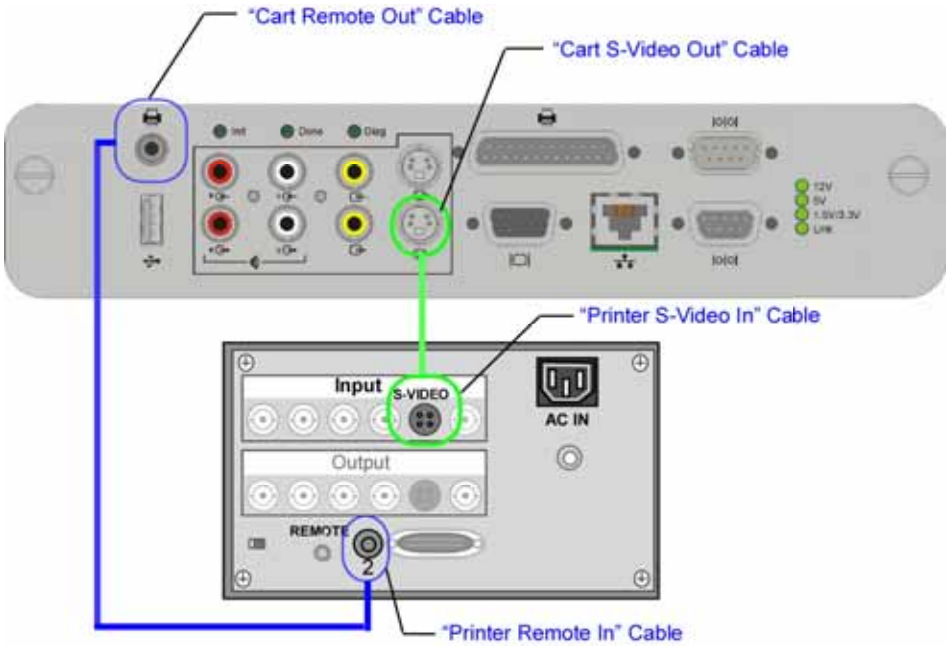

Figure 57: UP-21MD Final Cable Connections

32. Connect the "***Printer Remote In***" cable to the corresponding connector on the rear of the Sony Color Printer, and move the ***"Printer S-Video In"*** cable to the S-Video "**INPUT**" (Top) connector (as shown in the figure above).
33. Connect a transducer, Power On the cart, the UP-21MD printer, and Z.ONE scanner. Wait for startup to complete and image to be shown.
34. Press the **"FREEZE"** key to hold the ultrasound image on the Z.ONE.
35. Verify a printed image is produced on the UP-21MD when the "**Print**" key on the SuperCart is depressed.

NOTE: *Refer to the SONY UP-21MD Operators Manual, for detailed information on proper operation of this device.*

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15.4 SONY UP-D897 USB Digital Printer (*mini*Cart Only)

15.4.1 Installation Notes:

The intent of this procedure is to provide instructions, for use in the field, for installation of the SONY UP-D897 Digital (USB 2.0) B/W Printer, into the Z.ONE ***mini*Car**t.

15.4.2 Installation Procedure:

Initial Mounting and Basic Setup

STEPS:

1. Remove the printer, all installation hardware, tools, and cables from their packaging.
2. Following the steps below, using the front panel display menu and **Jog Dial** control, configure the initial user settings on the UP-D897 printer to match those shown in Figure 1, on the following page.

3. To bring up the setup MENU, “Press” the **jog dial** control (labeled “PUSH ENTER”).
4. Use your finger to “Roll” the **jog dial** control until the desired setting for configuration is shown in the display window.
5. “Press” the **jog dial** control to select the offered setting for modification.
6. “Roll” the **jog dial** control until the desired value is displayed in the window.
7. “Press” the **jog dial** control to store the displayed value as the new setting.
8. Repeat the above “Roll”/”Press” steps for configuring each of the remaining user settings into the UP-D897.

   IMPORTANT: To SAVE all of the newly configured settings, it is necessary to do the following steps:

9. “Roll” the **jog dial** until “**SAVE**” is displayed in the setup menu window.

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10. "Press" the **jog dial** control, and then "Roll" it to select which one of three possible user setup types (1, 2 or 3) you wish to save.

11. "Press" the **jog dial** to save the desired user settings type

12. To manually exit out of the setup MENU, "Roll" the **jog dial** until "**BACK**" is displayed in the setup menu window, and then "Press" the **jog dial**.

    NOTE: The setup menu will exit, and automatically return to the normal "Ready" printer state, when no new user actions are made on the **jog dial** for approximately 20 seconds.

#	Setting Name	Description	Zonare Recommended Value
28	BEEP	Audible Tone	ON
29	*CLEAN*	*Initiate head cleaning operation*	*n/a – control action in menu*
30	COMD	Selects printer driver version	897
31	DIR	Direction (start top or bottom, for printing)	NORMAL
32	FEED	Added gap between prints	ON
33	GAMMA	Gamma curve (print density)	4
34	IMAGE	Positive or Negative printout	POS
35	INFO	Printing of user settings on prints	OFF
36	*LOAD*	*Loads stored settings 1, 2 or 3 into use*	*n/a – control action in menu*
37	MEDIA	Paper type	HG
38	*MENU*	*Prints out current user settings to paper*	*n/a – control action in menu*
39	QTY	Number of copies to print	1
40	RSIZE	*Selects image enlargement to paper size*	*ON*
41	*SAVE*	*Saves settings (as user 1, 2 or 3)*	*n/a – control action in menu*
42	SHARP	Sharpness: Image tuning (1-15)	4
43	SIDE	Image rotation (Up or 90 degrees)	SIDE
44	SPEED	Print speed	NORMAL

Figure 58: Menu Settings (UP-D897)

13. Using the Philips screwdriver (provided in the kit), remove the four screws that retain the plastic feet to the bottom of the UP-D897 printer, but **DO NOT** remove the rubber feet from to the base of the printer.

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- Lay the printer mounting bracket (32656-00) against the bottom surface of the printer, aligning the holes in the plate with the four feet on the printer.

14. Install the four longer screws (provided in the kit), through the holes in the mounting bracket and into the threaded feet mounting holes in the printer.
15. Install the assembly to the chassis of the miniCart, by aligning the bracket with the mounting points, and securing with the mounting hardware, to lock it in place.

16. Connect the pre-existing USB cable on the miniCart, to the USB port at the back of the UP-D897 printer.

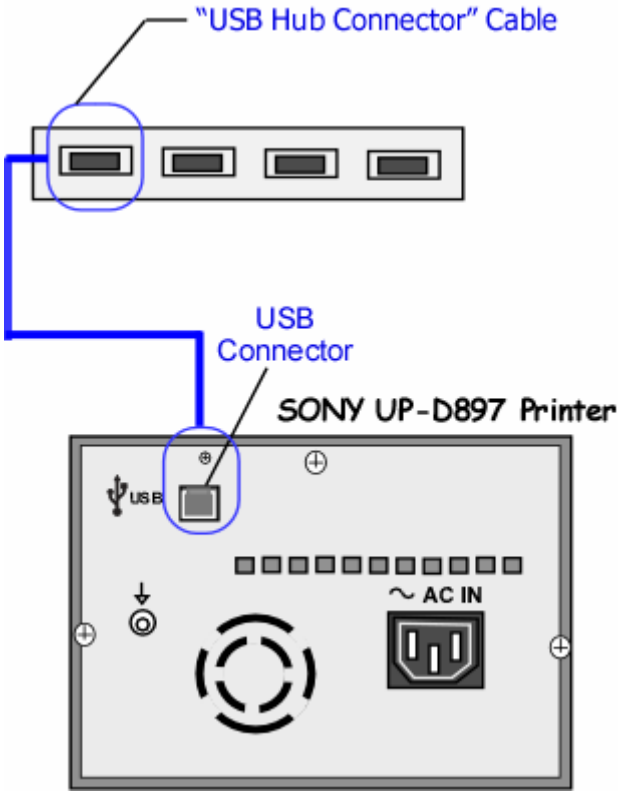

Figure 59: Cable Connections (UP-D897)

17. Connect the pre-existing AC power cable on the miniCart, to AC IN receptacle on the rear of the UP-D897 printer.

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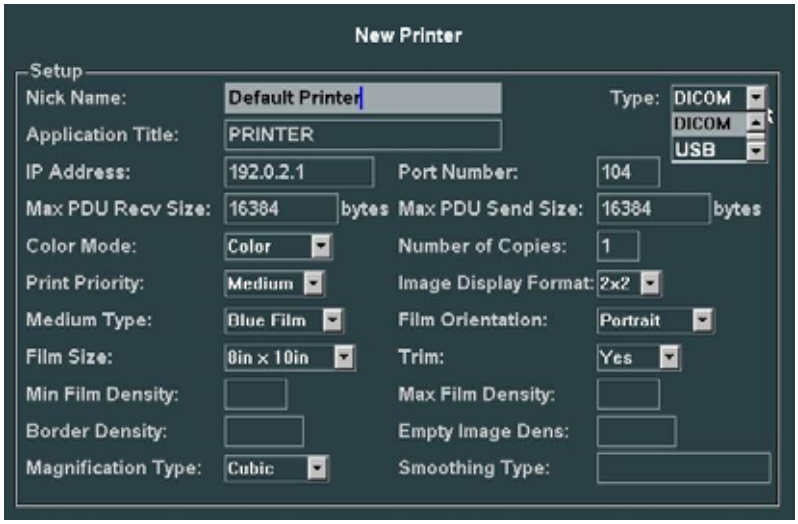
Printer (Digital) Configuration

18. Access the **New Printer** menu, using the path

    System Setup->DICOM->Printers->New

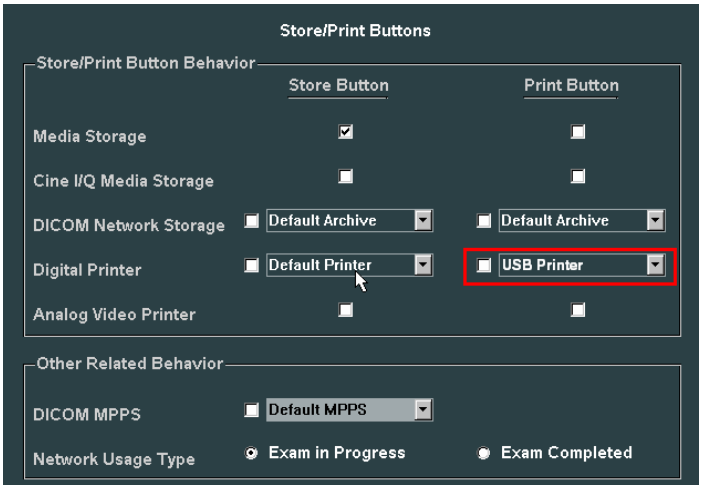


19. Using the pull-down menu, under the “TYPE” selection, select the USB printer
20. Type into the “Application Title” field, the name of the printer: “SONY UP-D897”
21. Select “APPLY” from the main menu, to save the changed settings

Print Button Configuration (*Trigger*)

22. Access the Print/Store Button configuration screen, using the path

    System Setup->Archive->Print/Store



23. Under the “**Digital Printer**” function for the “Print Button”, check the box to the left of the drop-down menu, enable this function
24. In the drop-down menu for this function, select the appropriate “***USB Printer***” selection

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25. Select “APPLY” from the main menu, to save the changed settings

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Operator Controls

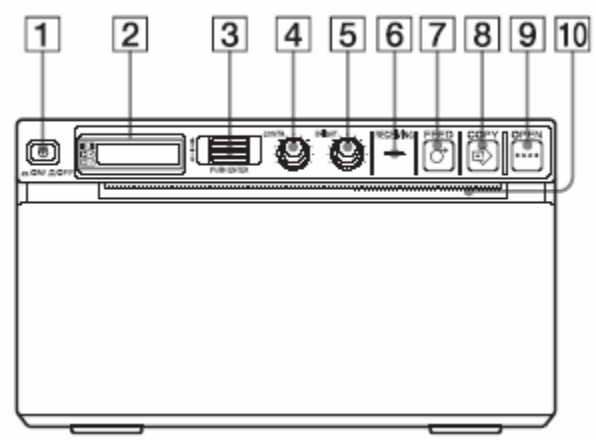

Figure 60: Operator Controls (UP-D897)

1 Power ON/OFF Switch

2 Printer Window LCD Display

3 JOG Dial (menu control)

4 CONTRAST

5 BRIGHTNESS

6 RECEIVING (indicates active print data transfer)

7 FEED (one-time push feeds paper, or holding during print cancels job)

8 COPY (prints another copy of previously transferred image)

9 OPEN (one-time push opens paper door, or holding during print cancels job)

10 CUT (cuts paper after image is printed)

Print Verification

26. Power on the *mini*Cart, and the UP-D897, and connect a transducer.

27. **FREEZE** the image. Verify a printed image is produced when the “**Print**” key on the Scan Engine is depressed.

NOTE: *Refer to the SONY UP-D897 Operators Manual, for detailed information on proper operation of this device.*

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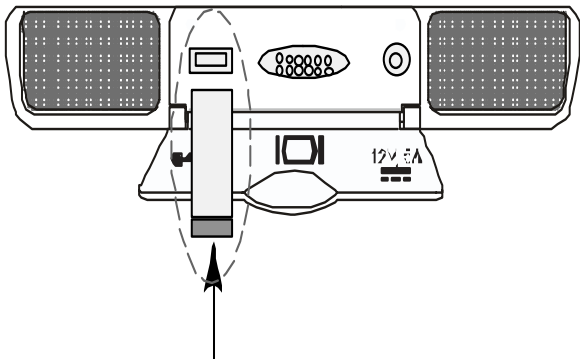
16.1 Standard Software Installation/Upgrade Procedure

CAUTION

- *As that it is recommended to perform all software upgrades with the Scan Engine out of the SuperCart (un-docked) it is extremely important to ensure that the battery has a minimum of 50% charge capacity, PRIOR to beginning this software upgrade procedure.*
- *If the charge is too low, either replace the existing battery with a properly charged one, or temporarily dock the Scan Engine in the SuperCart, (with the Cart's having AC power applied and the circuit breaker in the "On" position) long enough to achieve a fully charged state.*

1. Verify the Scan Engine is initially powered off
2. Disconnect transducer from Scan Engine, if currently attached.
3. Remove (un-dock) the Scan Engine from the SuperCart (if currently docked).
4. Open the rear access door on the Scan Engine, and insert the USB Memory Stick into the USB port, pressing lightly to ensure it is seated in the connector



5. Press the green power button, on the left-rear of the Scan Engine, to power the unit on.

6. Allow the Scan Engine to complete a normal boot operation (approximately 1 minute)
7. An initial software install alert message screen should appear on the LCD display
8. To begin the software install process, at each of the two (2) alert screens, press the "SELECT" key

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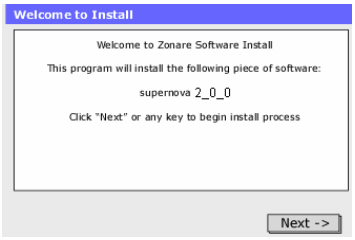
NOTE: *If it is determined that the software revision of the USB Memory Stick is not the desired version for installation, and it is desired to abort (select the "NO" option) the install operation (or abort it for any other reason), press the "BACK"* *key, then manually remove the USB Memory Stick..*

9. The following initial software installation screen should appear, and be displayed for a few seconds on the LCD Display

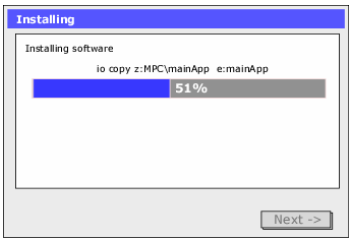
10. A final "***Welcome to Install***" screen should appear


Welcome to Install
Welcome to Zonare Software Install
This program will install the following piece of software:
supernova 2_0_0
Click "Next" or any key to begin install process
Next ->>

11. Press any button on the user interface of the Scan Engine to begin the software installation process.

    NOTE: *If a major change of firmware for the PIC device (on the Power Board in the Scan Engine) is included in the current software upgrade release, this will be "Part 1", of a 2-Part installation process. If not, the process will perform a single installation cycle,* and steps 11-13 below will be skipped.

12. The in-process installing status screen should appear, with a bar graph indicating a dynamic percent completion status



NOTE: *The main application install process should complete in approximately 5 minutes.*

13. After file installation is completed, the system will run a brief install verification process. The following screen will appear during this verification

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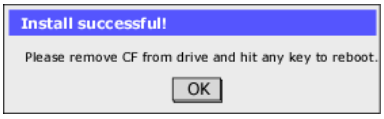
14. At the completion of a successful software installation/verification process, a dialogue box with the following message should appear on the LCD Display screen



15. Remove the USB Memory Stick from the Scan Engine.

16. Press any button on the user interface of the Scan Engine to finalize the software installation. The Scan Engine should perform an automatic reboot, powering back up in a fully operational condition.

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16.2 "*Advanced*" Software Installation Procedure

SPECIAL INFO

- *In cases where the revision level of the software on the* **z.one** *is being transitioned in a non-standard fashion, or has become corrupted and the system will not boot to perform a normal software installation process (as described in section 4 of this Tech Note), the following advanced software installation steps should be used.*

16.2.1 Interrupting the normal boot sequence (*"Alternate Boot Options"*):

1. Verify the Scan Engine is initially powered off
2. Disconnect transducer from Scan Engine, if currently attached.
3. Remove (un-dock) the Scan Engine from the SuperCart (if currently docked).
4. Open the rear access door on the Scan Engine, and insert the USB Memory Stick fully into the USB port, ensuring it is seated in the connector.
5. IMMEDIATELY abort the normal boot sequence by pressing (and holding) the Back key on the user interface of the SuperCart (or Scan Engine, if undocked), within a few seconds after pressing the power button.

6. The Scan Engine should abort the normal boot, and display a screen (shown on the following page) offering a variety of options.

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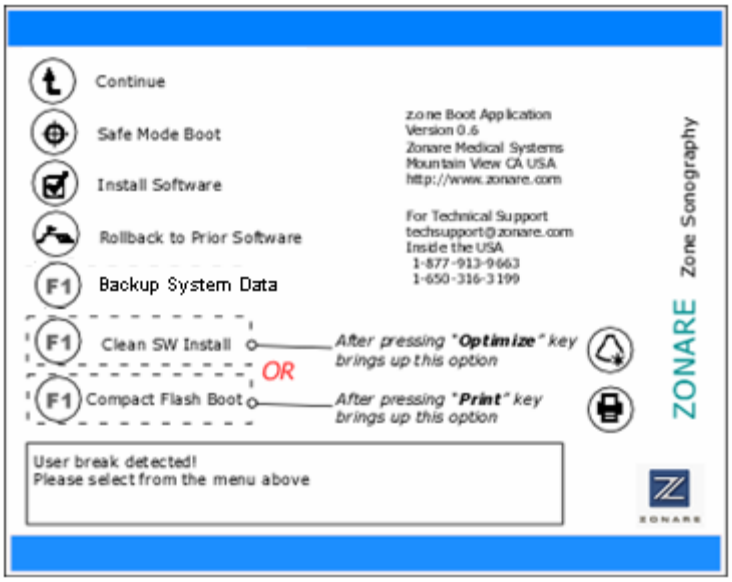
16.2.2 Advanced Install Operations:



SPECIAL NOTE: Pressing one of the following keys on the keyboard of the Scan Engine (or SuperCart if Scan Engine is "docked"), will bring up an additional **F1** key function into the on-screen menu (as shown above)

- Pressing the **OPTIMIZE** key will assign **F1** to: "***Clean SW Install***"
- Pressing the **PRINT** key will assign **F1** to: "***Compact Flash Boot***"

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Description of Key Functions

Key	Function	Operation Performed
	Continue	Pressing this key results in the **z.one** exiting the user break menu, and performing a normal system boot operation.
	Safe Mode Boot	*Not implemented at this time (future)*
	Install Software	Installs software from USB Memory Stick, retaining all existing User Presets and System (configuration) Presets (by automatically backing up to USB Memory Stick, prior to installing new software).
	Rollback to Prior Software	*Not implemented at this time (future)*
	Backup System Data	Moves the contents of the internal CompactFlash storage (Patient Exams) to the currently connected USB Memory Stick.

Description of Optional Hidden Functions

Key	Function	Operation Performed	Access Key
	Clean SW Install	Installs software from USB Memory Stick, over-writing (erasing) existing User Presets and System (configuration) Presets, with Zonare default values.	*Optimize*
	USB Memory Stick Boot	Utilizes bootable (containing full system software) USB Memory Stick as source for booting up Scan Engine, instead of loading from software installed in internal memory.	*Print*

1. Select the desired software operation from the items listed in the table above, depending upon the current state of the Scan Engine.
2. Follow all on-screen prompts to complete the software loading process.

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16.3 FTP Site Access: Software/File Downloads from Zonare

SPECIAL INFO

- *Zonare's "TECH SUPPORT"FTP site area is provided to enable global access by Customers, Distributors, and Service personnel.*
- *This tool is intended to allow direct access for downloading of file provided by Zonare Tech Support, (like downloads of new System Software).*
- *The TECH SUPPORT FTP area is also provided as a repository for transferring (uploading) files to Zonare Tech Support (i.e. image files for review).*
- *To ensure security, a User Name and Password are required.*

For Customers/Distributors/Service:

1. Type the following URL information into the "ADDRESS" box of your standard Internet Explorer/Netscape/etc. browser:

   Address: **ftp://12.40.200.87**

2. Enter the following User Name and Password information:

   User Name: ..... **techsupport**

   Password: **transfer6042**

3. Tech Support window should now be displayed, enabling uploading or downloading of files

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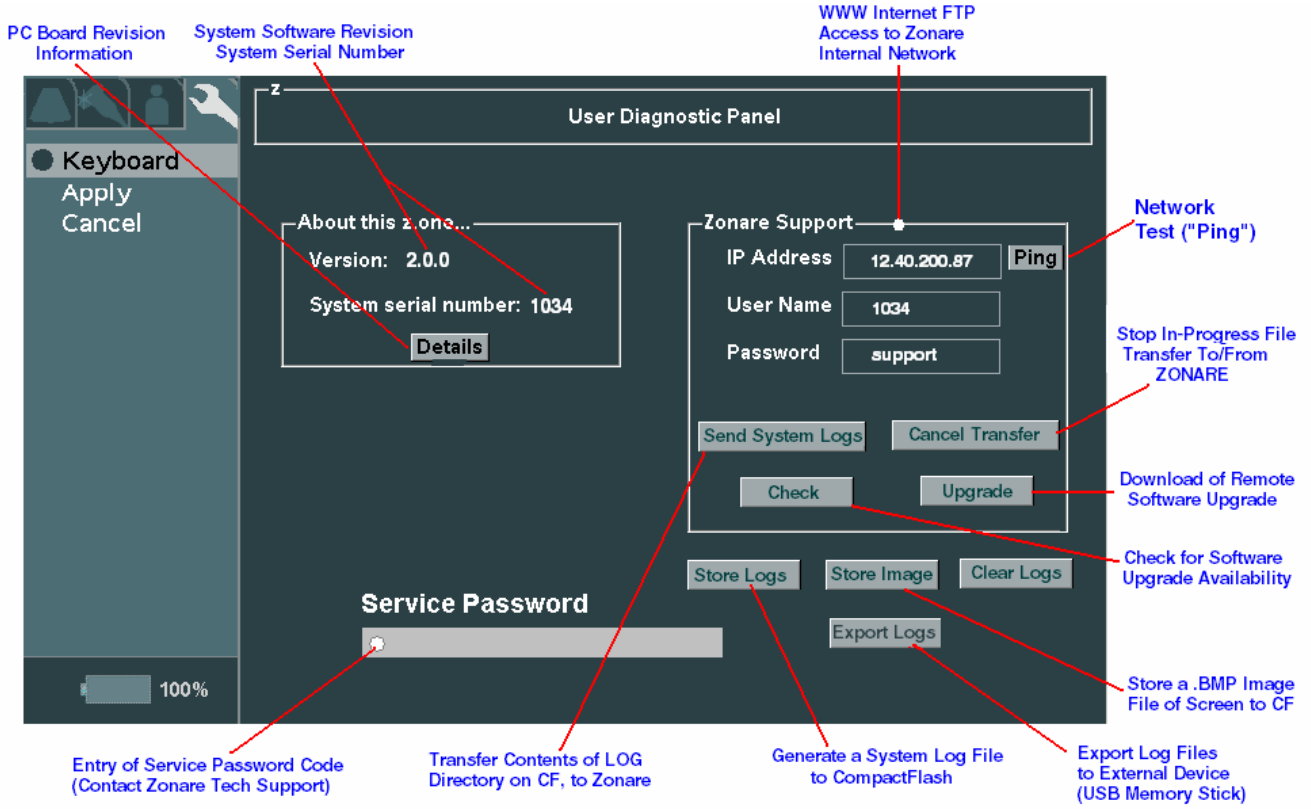
16.4 "DIAGNOSTIC" Panel Operations

16.4.1 Foreword

The basic **Diagnostics (User Diagnostic Panel)** screen allows service personnel access to important system information and service support processes. The basic page of the User Diagnostic Panel allows access to following functions:

- Checking of system software revision level
- Checking system serial number
- Checking revision levels of major PC boards in **z.one**
- Capturing of system status to a "LOG" files
- Exporting of "LOG" files from internal CompactFlash to external device (USB Memory Stick)
- Capturing current image screen, and storing as a .BMP file (to USB Memory Stick)
- Sending the contents of the internal "LOG" directory (via an internet connection) to ZONARE
- Checking for availability of software upgrades from remote ZONARE site
- Remote (over the internet) software upgrade of the **z.one** from the ZONARE site
- Testing of network connectivity



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16.4.2 Accessing the basic “Diagnostic” Panel

1. Using the “***Tab***” button and ***Menu Control*** on the Scan Engine (or SuperCart) user interface, advance to the “***Tools***” menu and then sequence through the following selection:

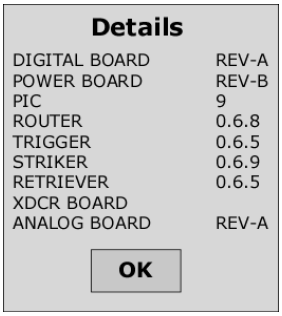
   Tools tab **--> System Setup --> Diagnostics**

2. Press the “SELECT” button on the user interface to gain access to the basic “**Diagnostic**” page

---

16.4.3 PC Board Version Information

1. Using the trackball, position the arrow cursor over the **DETAILS** box
2. Press the “SET” button on the user interface
3. A “**Details**” menu (similar to the one shown below) should appear, displaying current revision values programmed into the various PC boards in the **z.one**



4. Press the “BACK” button to hide the “Details” menu

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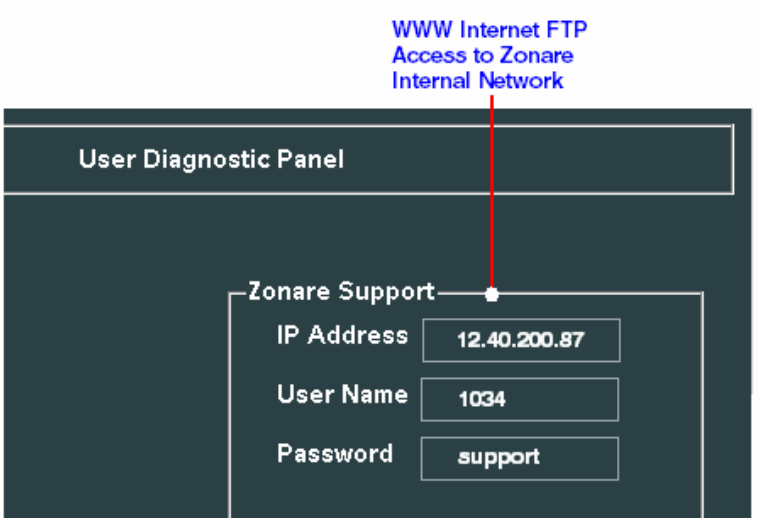
16.4.4 FTP Remote Access Configuration: (Zonare Support)

NOTE: *Normally these three parameters (IP Address, User Name, and Password) will already be configured properly into the entry boxes, as this is automatically setup at the time of initial software installation on the Scan Engine. You may therefore bypass this step initially, and only return to the configuration process IF it is found that the values entered are not allowing FTP access.*



1. On the Diagnostic page, in the "ZONARE SUPPORT" area on the screen, ensure that the following FTP remote access parameters are configured for the proper serial number of the Scan Engine in the **Z.ONE.**

   – IP Address: (for Zonare FTP Site) **12.40.200.87**

   – User Name (scanner serial #): 1xxx

   (XXXX being the 4 digits prior to the "S" in the Scan Engine's serial number - e.g. 1020, 1035)

   – Password:..... **support**

2. Using the ***Menu Control*** scroll down to backlight the **APPLY** selection, then press the "SELECT" button to save the updated settings

16.4.5 AUTOMATIC System Log Files – Download to ZONARE

NOTES: *The capturing of System Log files consists of the* ***z.one*** *creating a"***LOG***" directory, and writing the log file(s), to the internal CompactFlash storage inside the Scan Engine. Therefore it is necessary to have a USB Memory Stick, with adequate storage space, installed in the Scan Engine at all times.*

Log files are automatically created whenever the zone reboots after a system failure/crash. The transfer of these system crash log file can assist Zonare engineering in diagnosing the root cause of the problem.

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In addition to automatically generated Log files, a Log file may be manually created at any time by using the "STORE LOG" softkey function on the Diagnostic page (as discussed below)

1. To download the internally stored System Log files to ZONARE Tech Support, enter the proper IP Address, User Name, and Password values in the entry boxes on the screen (values as provided by ZONARE Tech Support)

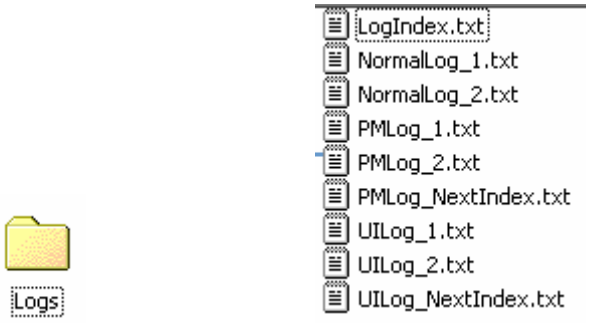
   NOTE: *The Scan Engine must be docked in the SuperCart and the **z.one** must be connected and properly configured on a local IT network that WWW internet access, in order to perform the remote system log file transfer to ZONARE.*

2. Using the trackball, position the arrow cursor over the **Send System Logs** box, and press the "SET" button to initiate the system log transfer

16.4.6 MANUAL Log File Capture (Store) – Download to ZONARE

1. Using the trackball, position the arrow cursor over the **Store Logs** box

2. Press the "SET" button to initiate the creation of the LOG directory and the writing ("Capture") of the log files to the internal CompactFlash storage. The directory and files will look similar to that shown below:



3. Using the trackball, position the arrow cursor over the **Send System Logs** box, and Press the "SET" button to initiate the system log transfer

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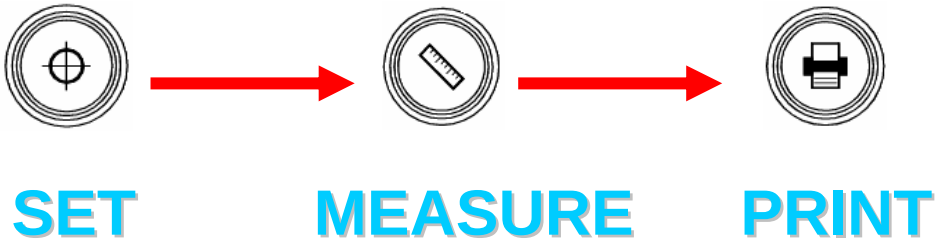
16.4.7 MANUAL Log File Capture (During "System Lock-Up") – Download to ZONARE

4. Ensure a USB Memory Stick is inserted into the port at the rear of the Scan Engine
5. In rapid (less than 1 second apart) succession, press the following three keys in sequence, on the User Interface of the Scan Engine (or SuperCart):



6. System log file is generated and copied to internal CompactFlash storage
7. Power off the Z.ONE by holding down the Power button for several seconds, until system shuts down
8. Power on the Z.ONE and allow it to fully boot
9. Return to the Diagnostic page, and follow the instructions provided in the earlier section on downloading the files to the ZONARE FTP site

16.4.8 MANUAL Image File Capture (Store) – Download to ZONARE

NOTE: *The following process is used for capturing (and storing) an ultrasound image screen snapshot as a .BMP file on the"***LOG***" directory of the removable USB Memory Stick card inside the Scan Engine. The intent is for capturing, and then forwarding (via an FTP transfer) digital images to Zonare for evaluation*

Operate the system normally until the desired ultrasound image event has occurred, at which time press "Freeze" to retain the image on the screen.

1. Press the "SET" button to initiate the capture of the current ultrasound image screen, and storing of the file to the LOG directory on the internal CompactFlash storage
2. To download the stored Image files to ZONARE Tech Support, enter the proper IP Address, User Name, and Password values in the entry boxes on the screen (values as provided by ZONARE Tech Support)

NOTE: *The Scan Engine must be docked in the SuperCart and the* ***z.one*** *must be connected and properly configured on a local IT network that WWW internet access, in order to perform the remote system log file transfer to ZONARE.*

Using the trackball, position the arrow cursor over the **Send System Logs** box, and press the "SET" button to initiate the system log transfer

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16.4.9 Remote Software Upgrade (download) from ZONARE site

NOTES: *It will be necessary to contact Zonare Technical Support, to acquire a unique user name and password (for each serial number* **Z.ONE***) in setting up each remote software upgrade session.*

The **Z.ONE** *(SuperCart) will need to be attached to an active direct internet accessible connection, at the install site, in order to perform this remote software upgrade procedure.*

1. Dock the Scan Engine in the SuperCart, and ensure the network port on the Rear I/O panel of the SuperCart is connected to an active internet connection
2. Insert a blank USB Memory Stick (CF) into the CF drive at the back of the Scan Engine
3. Power on the system and allow it to fully boot
4. Go to the" User Diagnostic Panel" page, and in the "**Zonare Support**" window, enter the IP Address, User Name, and Password provided by Tech Support
5. Click on the **CHECK** softkey to open remote communications for determining the available software for upgrade
6. To begin the remote software downloading process, click on the **UPGRADE** softkey
7. At the completion of the downloading of the software installation files to the local USB Memory Stick, the system will automatically begin the software upgrade/installation process
8. Respond accordingly to accept the prompt messages for a normal software installation, to perform the software upgrade process

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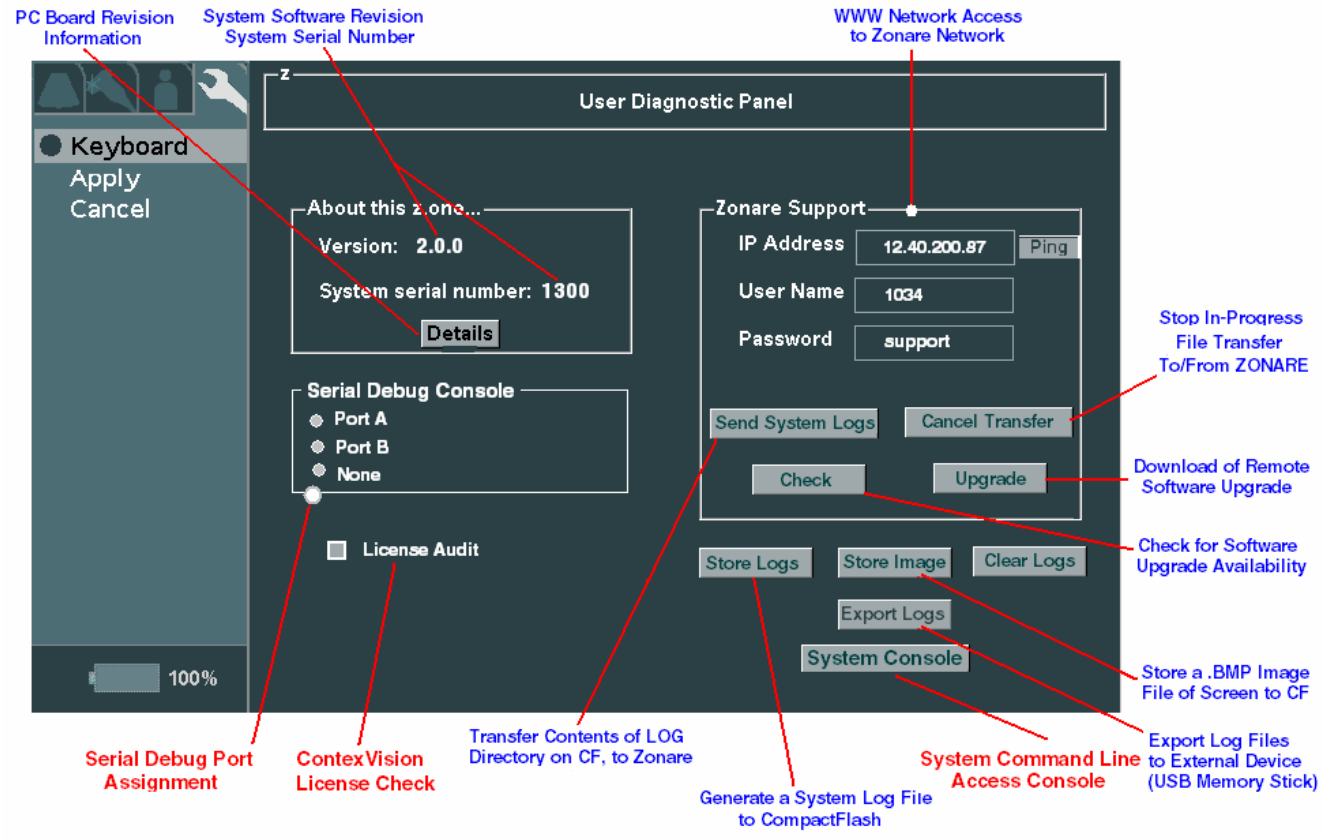
16.4.10 *Advanced* Service "Diagnostic" Panel Function

NOTE: *In addition to the diagnostic functions in the basic menu, access to some advanced software tools for servicing and advanced setup of the* ***z.one*** *are available in special cases. Due to the advanced nature of function accessible through this "Diagnostic" menu page, access is restricted to properly trained personnel.*

Protection is applied by way of a unique-per-system, daily "Service Password" access-code. For information on acquiring the daily access code for a particular ***z.one****, to access the advanced settings on the "Diagnostic" menu page, contact your ZONARE Technical Support representative.*

The following advanced function is added to the **Diagnostics** screen, after the service password has been entered:

- ***System Console*** access (for entering advanced commands)
- ***Serial Debug Console*** (serial port) setup
- ***License Audit*** (**ContexVision**) selection



16.4.10.1 Accessing the "Advanced" Diagnostic Functions (Password Entry)

1. Using the trackball, position the arrow cursor over the **Service Password** box

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2. Press the “SET” button

3. Type in the 35 character, daily service password (provided by ZONARE Tech Support), for the specific serial number **z.one** system

4. Place the arrow cursor over the **Apply** softkey, and press the “SET” button

5. The system will exit from the Diagnostic page, and store the password for enabling re-entry for the remaining calendar day

6. Repeat the steps for re-accessing the “**Diagnostic**” page

16.4.10.2 Utilizing the “System Console”

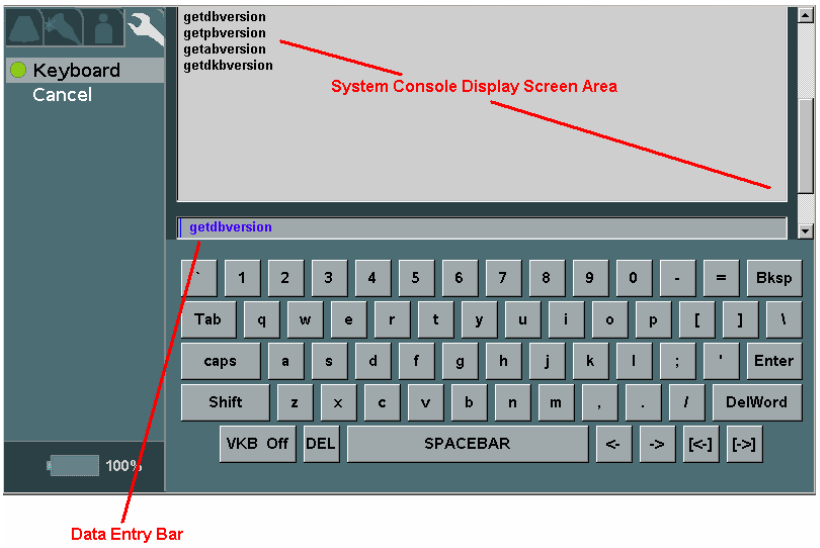
1. Using the trackball, position the arrow cursor over the **System Console** box

2. Press the “SET” button

NOTE: *If using the Scan Engine standalone (undocked from SuperCart), it will be necessary to first activate the VKB (virtual keyboard), for entries/commands in the System Console.*

3. IF using the Scan Engine standalone, highlight the “KEYBOARD” item in the menu, and press the “SELECT” key to activate

NOTE: *If using the Scan Engine standalone (undocked from the SuperCart), the “**TAB**” softkey (in the VKB) is used to scroll the contents of System Console display downwards, for viewing.*



4. Using the keyboard (or VKB with a stylus, on the Scan Engine), advanced commands can be entered, as directed by ZONARE Technical Support. The “Enter” key on the VKB is used for activating commands entered on the command line.

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5. At the conclusion of use of the System Console, to exit, press the “BACK” button on the user interface

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17 CLEANING AND DISINFECTING PROCEDURES

17.1 SuperCart

17.1.1 Cleaning Barco LCD Display

CAUTION

- *Take care not to damage or scratch the glass or LCD panel.*
- *Do not apply pressure on the glass or LCD panel.*
- *Do not apply or spray liquid directly to the glass, panel or cabinet as excess liquid may cause damage to internal electronics. Instead, apply the liquid to the cleaning cloth.*
- *Do **NOT** use any of the following:*
  - *Lye or cleaning solutions containing lye**
  - *Acid*
  - *Detergents with fluoride*
  - *Detergents with ammonia*
  - *Detergents with abrasives*
  - *Steel wool*
  - *Sponge with abrasives*
  - *Cloth with thread made of steel*
  - *Other coarse tools*

- **CLEANING**

  Front Glass:

1. Power down the **z.one** ultrasound system
2. Clean the glass using a soft cotton cloth, lightly moistened with a watery solution or a mild commercial glass-cleaning product suited for coated glass surfaces
3. Wipe dry with a clean, dry, soft, lint-free cloth

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External Case:

CAUTION

- *Do NOT expose the external case to any of the following:*
  - *Cidex*
  - *Betadine*
  - *Alcohol (Isopropyl and Ethyl)*
  - *Ammonia based cleaners (Windex)*
  - *Aquasonic Gel*

1. Power down the **z.one** ultrasound system
2. Clean the external case of the display using a soft cotton cloth, lightly moistened with a mild cleaning product recognized for safe use on medical equipment
3. Repeat with water only
4. Wipe dry with a clean, dry, soft cloth

17.1.2 Cleaning the SuperCart exterior surfaces

CAUTION

- *Do not use disinfectants (such as gluteraldahyde or hydrogen peroxide), or acetone, to clean any surfaces on the* **z.one***, or its accessories:*

1. Power down the **z.one** ultrasound system
2. Using a soft cloth, only dampened with mild soap and water, clean the exterior surfaces.
3. Thoroughly dry all cleaned surfaces with a soft cloth

17.2 Scan Engine

17.2.1 Cleaning LCD Display

1. Power down the **z.one** ultrasound system
2. Spray a mild cleaner onto a soft, clean cloth, and wipe the screen clear of dust, fingerprints, etc.
3. Thoroughly dry all cleaned surfaces with a soft cloth

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17.3 Transducers

17.3.1 Cleaning – Care of Transducers

17.3.1.1 Approved disinfectants

Only disinfectants listed below are tested and approved for use on ZONARE transducers. No other products should be used, as damage to the transducer may result.

• **Cidex**

Figure 61: Approved Disinfectants Table

17.3.2 Cleaning – Disinfecting Procedures

There are two methods of cleaning and disinfection available for the **z.one** transducers.

- For external-use transducers (CLA and LA), ZONARE recommends performing the "wipe method" (described next) after each exam. In addition, ZONARE recommends performing the immersion method disinfection weekly.
- For internal probe (EV), ZONARE recommends performing the "immersion method" disinfection after each exam.

The **z.one** transducers cannot be sterilized. When sterility is required, use a sterile transducer cover/sheath and sterile ultrasound/coupling transducer gel. Follow all prescribed sterility techniques.

WARNING

*To avoid electrical shock, prior to cleaning any transducer, fully disconnect it from the Scan Engine. If cleaning of the transducer is being performed near the **z.one**, ZONARE also recommends disconnecting the AC power from the SuperCart or miniCart..*

CAUTIONS

Always use protective eyewear and clothing when cleaning or disinfecting the transducers. Do not allow the disinfectant to come in contact with metal surfaces (transducer connector). Use a soft cloth and warm soapy water to remove any disinfectant that remains on metal surfaces. If using a brush, only use a very soft brush when cleaning transducers, because even a soft brush may cause transducer damage. Use only a soft cloth

17.3.2.1 Wipe Method

1. Disconnect the transducer from the **z.one**.
2. Remove the transducer cover/sheath and discard.
3. Clean the surface of the transducer, using a soft cloth dampened with mild soap (or isopropyl alcohol) to remove particulate, ultrasound coupling gel, or body fluids. Apply the cleaning solution to the cloth, and then use to wipe down the transducer.
4. After cleaning, wipe the transducer again with a cloth soaked with clean water to remove solution.

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5. Mix the disinfectant solution (refer to **Figure 61: Approved Disinfectants Table**), following the disinfectant label instructions for solution strengths and disinfectant contact duration.
6. Air dry the transducer or towel dry it with a clean cloth.
7. After disinfecting, wipe the transducer again with a cloth soaked with clean water to remove any residual solution prior to use on patients.
8. Examine the transducer for damage, such as cracks, splitting, holes, or fluid leaks. If damage is evident, discontinue use of the transducer and contact Tech Support.

17.3.2.2 Immersion Method

CAUTIONS

During immersion disinfection, never immerse the transducers longer than 1 hour. Damage may occur to the transducer housing and/or components if disinfection times exceed these recommended limits.

Using a non-recommended cleaning or disinfectant solution, incorrect solution strength, or immersing the transducer deeper or longer than indicated can damage the transducer.

To prevent possible damage to the electronics of the transducer, never immerse the transducer beyond the point (10mm below the top edge of the transducer housing), as shown in the figure below.

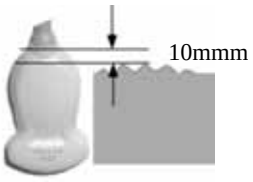

Figure 62: Transducer immersion limits

1. Disconnect the transducer from the **z.one**.
2. Remove the transducer cover/sheath and discard.
3. Clean the surface of the transducer, using a soft cloth dampened with mild soap (or isopropyl alcohol) to remove particulate, ultrasound coupling gel, or body fluids. Apply the cleaning solution to the cloth, and then use to wipe down transducer.
4. After cleaning, wipe the transducer again with a cloth soaked with clean water to remove solution.
5. Mix the disinfectant solution (refer to "**Figure 61: Approved Disinfectants Table**"), following the disinfectant label instructions for solution strengths and disinfectant contact duration.
6. Immerse the transducer into the disinfecting solution, ensuring it is not immersed below the depth indicated in the figure (**Figure 62: Transducer immersion limits**). Follow the instructions on the disinfectant label for the duration of transducer immersion; do NOT exceed the 1 hour maximum ZONARE-specified limit.

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7. Following the instructions on the disinfectant label, thoroughly rinse all areas of the transducer below the immersion level.
8. Air dry, or towel dry, the transducer with a clean cloth.
9. Examine the transducer for damage, such as cracks, splitting, holes, or fluid leaks. If damage is evident, discontinue use of the transducer and contact Tech Support.

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18 MAINTENANCE – CALIBRATION PROCEDURES

18.1 Foreword

Being a digital front-end imaging system, and non-mechanical device, the **z.one** has a very limited number of routine maintenance and calibration procedures that will be required. The maintenance procedures currently described in this manual, are very basic in nature, and may therefore be performed by the Operator, as well as normal Service personnel.

18.2 List: Maintenance Procedures

The basic maintenance procedures to be performed on the **z.one**, consists of the following:

- Adjustment of UI Lift Release, cable adjustment
- Cleaning of accumulated dust from air inlet screens on Scan Engine
- General wipe-down cleaning of all User contact surfaces

18.3 List: Calibration Procedures

The basic maintenance procedures to be performed on the **z.one**, consists of the following:

- Calibration of the Touchscreen function on the Scan Engine
- *mini*Cart LCD Display Monitor Adjustment
- SuperCart LCD Display Monitor Calibration *("Full Autoset")*

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18.4 UI Lift (Gas Shock) Release Cable Adjustment - (SuperCart)

18.4.1 Gaining access to cable adjuster

1. Disconnect AC power to SuperCart.
2. Using the release lever (located at the right/front handle on the SuperCart), raise the UI of the SuperCart to its highest elevated position.
3. Open rear access door on Backpack, at rear of SuperCart.
4. Remove any equipment stored in backpack.
5. Remove two (2) upper Torx screws, retaining metal access plate to backpack frame.

6. Slide access plate upward, to enable metal tang at bottom of plate to clear recess hole in backpack frame.
7. Lower access plate to enable upper tang to clear upper recess hole in backpack frame.
8. Remove access plate.

18.4.2 Cable adjustment (Barrel adjuster)

1. Using a long flat-blade screwdriver, leveraged against the edge of the opening in the backpack frame sheetmetal, with the screwdriver tip placed under the cable clamp block, gently pry the release mechanism upward until tension is just removed from the cable. (This will free the barrel adjuster, for easy rotating during adjustment)

2. While continuing to hold tension off the cable adjuster, rotate the silver barrel adjuster in the direction required for correcting the current type of release issue (see notes below).

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NOTE 1: If the cable has **too much** slack (the lift is not properly releasing), rotate the adjuster barrel in the ***counter-clockwise*** (as viewed from the top) direction, a sufficient amount to reduce cable slack, and provide an optimum release point on the release lever handle.

NOTE 2: If the cable is **too tight** (the lift is not staying locked in position when the release handle is totally released – aka "drifting"), rotate the adjuster barrel in the ***clockwise*** (opposite to what is shown in the illustration above) direction just far enough to resolve the "drifting" condition.

3. Reverse cable access process above, to complete this procedure.

18.5 Touchscreen Calibration - (Scan Engine)

IMPORTANT

- *The touchscreen is very sensitive to the "technique" used by the Operator in making contact at each of the calibration points with the stylus. It is very important that only a single discrete (and firm) contact be made at each of the green splash graphics calibration points. Any excessive debounce, when pressing the stylus to the screen, will likely result in a failure of the calibration process.*

18.5.1 Calibration Procedure

1. Remove the Scan Engine from the SuperCart
2. Press the On/Off switch on the Scan Engine, to power-on the **z.one**
3. Using the "***Tab***" button and ***Menu Control*** on the Scan Engine user interface, advance to the "***Tools***" menu and then sequence through the following selection:

   Tools tab --> **SYSTEM SETUP --> Touchscreen**

4. Press the "SELECT" button on the user interface. The Touchscreen calibration screen should appear, with the first (of 3) green "splash" target points being should now be displayed

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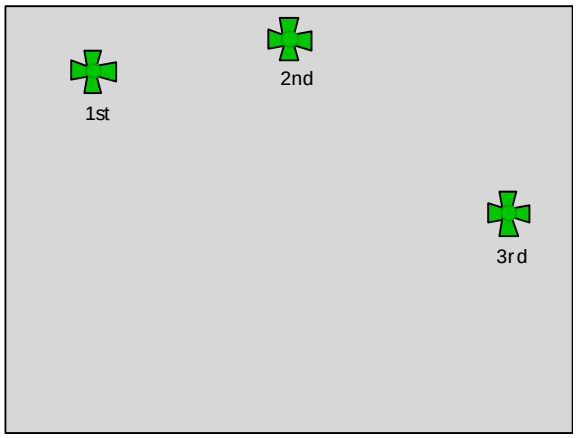

5. In a **<u>single-firm contact motion</u>**, touch (and hold) the stylus to the center of the 1st target point until the **Z.ONE** detects this contact, and moves the calibration target point graphic to the next (2nd) calibration position.
6. Repeat the same single-firm touch (and hold) procedure for the remaining two calibration points.
7. If successful, the **Z.ONE** should return to the *System Setup* menu. If calibration failed message appears, repeat the process being very attentive to the method of (single point) stylus contact with the LCD display for contact.

18.5.2 Verifying Calibration

1. Using the ***Menu Control,*** advance to the "***Annotations***" selection.
2. Press the "SELECT" button to bring up the Annotations screen.
3. Press the "SELECT" button to bring up the **VKB** (Virtual "Keyboard").

4. Using the trackball, position the arrow cursor in the "New Item" entry box on the screen and press the "SET" key.
5. Using the stylus to touch within the virtual keys on the **VKB**, verify that the desired text characters appear in the text entry box on the screen.

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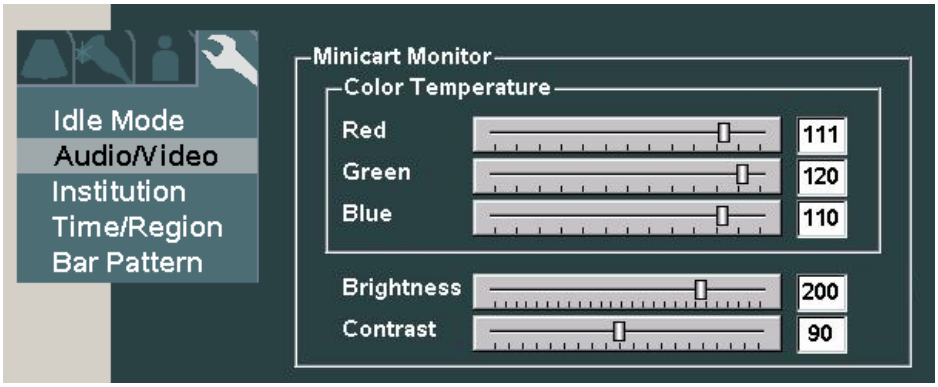
18.6 LCD Display Monitor Adjustment – User Settings (*mini*Cart Only)

18.6.1 *mini*Cart LCD Display User Settings Adjustment

There are no local adjustment knobs on the LCD Display used on the *mini*Cart. The display settings of the monitor are controlled remotely (via the DVI video cable connection), by an on-screen Audio/Video control menu on the Scan Engine.

The adjustable settings are:

- Brightness
- Contrast
- Color Temperature (Red, Green, Blue)



The adjustment of the video settings on the LCD Display, are accomplished by performing the following steps.

1. Power on the **z.one** and allow it to fully boot
2. Using the onscreen menus of the Scan Engine, select **Tools** | **System Setup** | **Display** | **Audio/Video**|, to access the audio/video configuration menu
3. Using the trackball, place the cursor arrow to the desired position on the sliding bar scale (of the desired display control), and press the **SET** key to mark the setting.
4. Repeat the steps above for any additional display settings that are desired for change.
5. To save the new settings and exit, select **Apply** from the menu, to save the configuration and return to the Audio/Video menu.
6. Visually inspect the output of the LCD Display, to confirm the desired video levels are achieved. Repeat the above steps, if required

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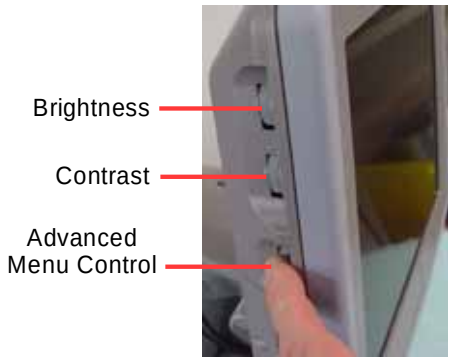
18.7 LCD Display Monitor Adjustment - Calibration (SuperCart Only)

18.7.1 Basic Adjustment

There are three adjustment control wheels, located on the upper-left side of the Barco (brand) monitor:

- Brightness (Top)
- Contrast (Middle)
- *"**OSD**" (Advanced Menu) control (Bottom): ..... *see section 18.7.2



NOTE: *The manual **Brightness** and **Contrast** settings directly control the monitor's input amplifier bias and gain, respectively. In the "Advanced Menu" mode, an asterisk (*****) is displayed next to the recommended values for these settings; based on Barco factory calibration. It is recommended to maintain these settings at (or close) to these factory calibrated values.*

18.7.2 "OSD"- Advanced Menu Calibration Procedure

NOTE: *Although the factory default recommended settings (refer to* Figure 63: Barco Display - "OSD" Menu Specifications Table*) **Figure 63: Barco Display - "OSD" Menu Specifications Table**) can be manually adjusted for different ambient lighting conditions, large deviations from these settings can cause monitor front-end saturation. This can result in poor display performance, and may also affect image consistency with external image review stations.*

- **System Set-up**

1. Ensure the Scan Engine is installed in the pocket of SuperCart
2. Connect AC power to SuperCart
3. Move the circuit breaker (at rear of unit) to the "ON" position, to apply power to the SuperCart
4. Press the Power On/Off button, on the docked Scan Engine, to power-up the **z.one**

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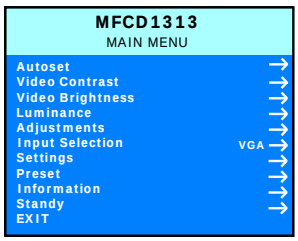
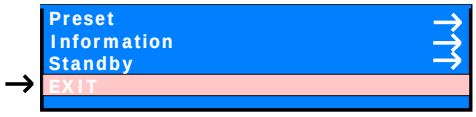
- **Entering the Barco "OSD" - *Advanced Menu***

1. Rotate the bottom (3rd) wheel/button, on the left side of the Barco monitor, to bring up the "**OSD**" (Operating Setup Display) pop-up menu on the upper left-hand portion of the display.

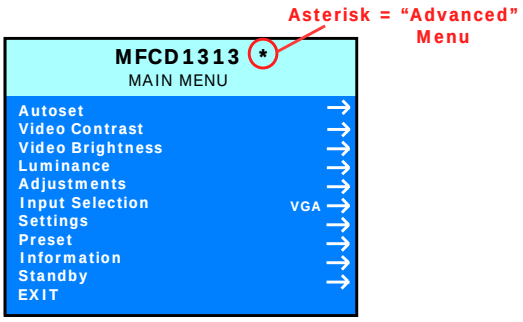


2. Rotate this same wheel/button until the "**Exit**" selection in the menu is backlit (selected).



3. ***PRESS*** and ***HOLD*** this same wheel/button for several seconds. This will activate the "Advanced Menu" screen.

NOTE: *Successful enabling of the Advanced Menu can be identified by the presence of an asterisk (*****) in the heading at the top of the page of the "OSD" menu. If an asterisk is NOT present, repeat the above steps.*



- **Verifying –Setting the Zonare-Specific Values**

Configuring "***SETTINGS***" menu selections:

1. Rotate wheel/button to highlight "**Settings**" selection
2. ***PRESS*** wheel/button to bring up the "Settings" submenu
3. Check "***RTIS***" ("*Speed Compensation*") setting. Make sure it is turned "**OFF**". Toggle (push wheel/button in) to change setting to "**OFF**", if necessary.
4. Rotate wheel/button to highlight "***Color Temp***" selection
5. ***PRESS*** wheel/button to bring up the "***Color Temp***" sub-menu

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6. Check (and change if necessary) the values for the R, G and B settings, to correspond to the values in the Table below:

Parameter	Value
Speed Compensation (RTIS)	OFF
Color Temp:	
R	90
G	92
B	95
Luminance	150
Gamma	1.6

Table: Zonare Specific Settings

7. Exit back to the main “Settings” menu
8. Rotate wheel to highlight the “***Display Function***” offering
9. ***PRESS*** wheel/button to select this function
10. Check (and change if necessary) the Gamma setting selected to correspond to the value shown in the **Table** above
11. Rotate wheel/button to hightlight "Exit"
12. ***PRESS*** wheel/button to exit main menu

Configuring “***Luminance***” setting:

13. Rotate wheel/button to hightlight “***Luminance***”
14. ***PRESS*** wheel/button to select this function
15. Check (and change if necessary) the value to correspond to the number shown in the Table above
16. ***PRESS*** wheel/button in to exit "**Settings**" submenu and to go back to "main menu"

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18.7.3 Display Replacement Only: “Full AutoSet” Service Procedure

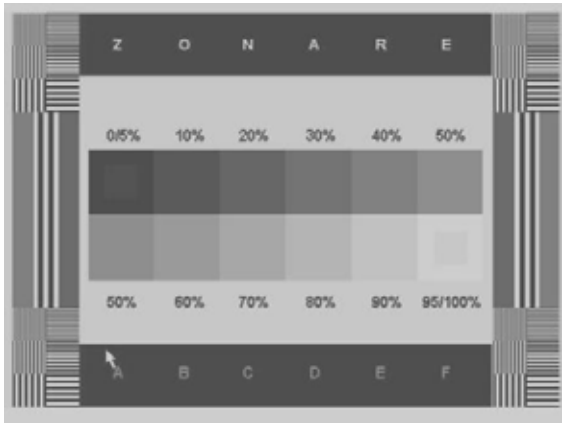
If the Barco display, or the Cart “Main Board” are replaced in the field, the following ***Full AutoSet*** video level calibration process must be performed **ONE TIME**, on the new unit.

This *AutoSet* operation consists of the Barco display software analyzing the analog video input levels (produced at the video output of the **Z.ONE**) and resultantly calibrating the monitor’s internal look-up table values to match the requirements.

Performing video level self-calibration (“Full Autoset”) process:

1. Using the “***Tab***” button and ***Menu Control*** on the SuperCart user interface, advance to the “***Tools***” menu
2. Sequence through the following selections to bring a grayscale test pattern (called “***bar pattern***” in the menu) onto the Barco display

Tools tab **--> SYSTEM SETUP --> Display --> Bar Pattern**



The SuperCart should display a full screen test pattern (as shown above). The video signals from the SuperCart, used to create this test pattern, will be used by the Barco Display calibration software during the FULL ***AUTOSET*** *procedure below*

4. Perform the same steps used previously in this document for accessing the “***Advanced Menu***” on the Barco display setup screen
5. Rotate bottom wheel/button to highlight "***Autoset***" (at the top of main menu)
6. ***PRESS*** wheel/button to go into "***Autoset***" submenu
7. Select "***Full Autoset***" and press the wheel/button in once to activate.

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8. A full calibration cycle will begin, using the displayed bar pattern. Wait until calibration is done (message will appear to indicate completion).
9. Rotate wheel/button to highlight "**EXIT**" under "***Autoset***" submenu
10. ***PRESS*** wheel/button to exit "***Autoset***" submenu and to go back to main menu
11. Rotate wheel/button to highlight " **EXIT** " under main menu
12. ***PRESS*** the wheel/button to return to the main menu
13. Rotate wheel/button to highlight "**Exit**" under main menu

---

Saving newly calibrated settings:

14. ***PRESS*** the wheel/button to exit main menu. The setup screen will prompt if you want to save changes. Select "**YES**".

This is a VERY IMPORTANT STEP, or all newly calibrated settings from the "Full Autoset" process will be lost!

Conclusion:

15. To remove the bar pattern from the Barco display; push the "***BACK***" button on the SuperCart user interface keyboard.

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Barco "OSD" (**O**perational **S**et-up **D**isplay) **Menu Specifications Table**

Top Level Menu	Level 2 Menu Items	Level 3 Menu Items	Options	ZONARE Setting	Description
Autoset					
	Full Autoset		->	Run "Full" w/Bar pattern displayed	Performs Automatic Geometry, Phase and Gain
	Automatic Geometry		->	*Not used*	Adjusts image position for centered image
	Automatic Phase		->	*Not used*	Calibrates sampling phase
	Automatic Gain		->	*Not used*	Calibrates analog amplitude and analog black level on input ADC
Video Contrast					
	Contrast CAL pos		->		Adjusts contrast to calibrated position (value retrieved via automatic gain)
	Man Contrast adjust		0-255		controls analog amplitude on input ADC
Video Brightness					
	Brightness CAL pos		->		Adjusts brightness to calibrated position (value retrieved via automatic gain)
	Man Brightness adjust		0-127		controls analog black level on input ADC
Luminance			100-400 (Cd/m2)	150	Sets target output luminance in Cd/m2
	Geometry				
		Automatic geometry			Adjusts image position for centered image
		Hor Pos	0-600		Adjusts horizontal position of image
		Vert Pos	0-255		Adjusts vertical position of image
		Hor Active	600-1600		Adjust # of horizontal active pixels
		Vert Active	250-1259		Adjusts # of active lines
		Scaling	None – Best fit – Full Screen –	BEST FIT	Selects scaling mode
	Phase				

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Top Level Menu	Level 2 Menu Items	Level 3 Menu Items	Options	ZONARE Setting	Description
		Automatic Phase			Calibrates sampling phase
		Frequency	500-2500		Adjusts # of pixels/line
		Man Phase adj	0-31		Adjusts sampling phase
	Low Pass Filter		None – Min – Medium – Max –	MIN	Selects analog low pass filter on input ADC
Input Selection			Auto – VGA – SVHS – VHS –	AUTO	Selects input source
Settings	**DPMS**		on/off	ON	enables/disables DPMS
	Color Temp				
		Red	0-100	90	Adjusts Red video amplitude
		Green	0-100	92	Adjusts Green video amplitude
		Blue	0-100	95	Adjusts Blue video amplitude
	RTIS ***(Speed Compensation)***		on/off	OFF	Enables/disables response time improvement system (*speed compensation*)
	Display Function		None – Gamma 1.6 – Gamma 1.8 – Gamma 2.0 – Gamma 2.2 –	GAMMA 1.6	Selects display function (look up table)
	OSD position		top left – top right – center – bottom left – bottom right –	TOP LEFT	Selects OSD position
	Automatic Menu Exit		on/off	ON	If **ON**, OSD disappears automatically after 2 minutes
	User control		on/off	ON	Enables/disables user controls
Preset					

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Top Level Menu	Level 2 Menu Items	Level 3 Menu Items	Options	ZONARE Setting	Description
	Find Next Preset		->		Searches for next matching preset (video timing)
	Clear User Presets		->		Erases all user programmed presets
Information					
	General Information (read only)	- Product - Serial # - SW version - Lifetime display - Lifetime backlight - Firmware	(read only)		Displays serial number, lifetime, software version
	Current Input Format		->		Displays timing information current input timing
Standby			->		Places display into DPMS mode
Exit	***Advanced Mode***				*****Holding 3rd Knob = Advanced Mode

Figure 63: Barco Display - "OSD" Menu Specifications Table

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19 SYSTEM TROUBLESHOOTING

19.1 Foreword

Many **z.one** malfunctions are caused by a routine problem, such as power disconnection or the maladjustment of basic imaging or peripheral device (LCD display) controls. Before calling Tech Support, please perform the following troubleshooting procedures on the affected component(s).

The troubleshooting information in this section is intended to assist in diagnosing potential causes of a variety of system problems. It should be noted that as a result of the advanced level of integration in the electronic circuitry of the **z.one** diagnostic ultrasound system, the amount service/repair that can be performed in the field, is limited to a specific number of FRU's (Field Replaceable Units).

19.2 Technical Support Contact Information

- **USA and Canada**

ZONARE Medical Systems Inc
1061 Terra Bella Avenue
Mountain View, CA 94043-1839

Toll-free phone live-voice support: .....**877-913-9663** (5:00AM – 5:00PM, Pacific Standard Time)

Tech Support FAX line **650-230-2817**

Tech Support e-mail .....**techsupport@zonare.com**

Corporate web site.....**www.zonare.com**

FTP site (Tech Support Window):

- URL **ftp://12.40.200.87**
- User Name:..... **techsupport**
- Password: **transfer6042**

- **Europe and Asia**

Contact your local authorized dealer first, or use the Zonare contact information. **Note**: "Toll-free" live-voice support is not available outside the United States/Canada.

Phone live-voice support:.....**650-316-3199** (5:00AM – 5:00PM, Pacific Standard Time)

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19.3 Troubleshooting

19.3.1 Power-On Problems

SuperCart (with docked Scan Engine) fails to power on

- Ensure that the AC power is connected to a wall outlet.
- Ensure that the circuit breaker (located in the lower-left of the rear panel) is in the “on” (up) position.
- Ensure that the “scanner link” indicator lamp (bottom green indicator) (located on the right-hand side of the Rear I/O panel at the back of the SuperCart) is flashing after the Scan Engine has been docked (prior to powering on the Scan Engine).
- Ensure Barco LCD monitor display is powered on (verify illumination of internal LED’s, through vent slots). If off, press/hold/release bottom rotary knob/button on Barco display, to power on display.
- If the LED is not flashing, remove (undock) the Scan Engine from the SuperCart pocket and inspect for any damage to Scan Engine and SuperCart docking connectors; check for any debris/obstructions in the pocket or connectors.
- Re-dock the Scan Engine into the SuperCart pocket, ensuring proper alignment, and then repeat the power-on procedure.
- If the SuperCart still does not power on, remove the Scan Engine and attempt to operate it in the stand-alone mode to determine if the problem is with the SuperCart or the Scan Engine.
- If either component fails to start up after these steps, contact ZONARE Tech Support.

Scan Engine (undocked) fails to power on

- Remove the battery from the Scan Engine, and then press the battery charge status button to ensure that a charge of greater than 25% is available. If the battery charge is insufficient, replace the battery or dock the Scan Engine in a powered-on SuperCart and allow time to recharge the battery.
- Disconnect the transducer from the Scan Engine (if attached), and then repeat the attempt at powering on the unit.
- Dock the Scan Engine in the SuperCart and attempt to power on the **z.one**. If the **z.one** powers on, the problem is in the Scan Engine battery. Replace the battery.
- If the Scan Engine still fails to power on, contact ZONARE Tech Support.

19.3.2 System Start-Up Problems

Scan Engine (undocked) fails to properly boot

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- Install a bootable (system software files present) USB Memory Stick into the USB port at the rear of the Scan Engine, and then try to power on the **z.one** again (selecting the "boot from USB Memory Stick option)

- If the system boots OK, perform software re-install procedure on the Scan Engine, from the source USB Memory Stick

- If the Scan Engine still fails to power on, contact ZONARE Tech Support.

19.3.3 Peripheral Problems

Barco LCD display monitor on SuperCart, no video

- Ensure Barco LCD monitor display is powered-on (verify illumination of internal LED's, through vent slots). If off, press/hold/release bottom rotary knob/button on Barco display, to power on display.

- Power down the Scan Engine, then switch off circuit breaker (at rear of SuperCart) to remove power to SuperCart electronics. Reverse process to power back on SuperCart, then Scan Engine, to reinitialize software handshaking between the two devices.

- Remove gray plastic half-shell covers on back of monitor, and inspect/verify all cable connections.

External printer/recorder peripheral(s) fails to power on

- Check the AC power cord connections at the AC power outlet box (located inside backpack storage area) at rear of the SuperCart.

- Ensure that the green power indicator light on the AC power outlet box is illuminated, indicating that power is present.

- Temporarily connect the AC power cord of the peripheral to a local AC receptacle, and test for operation of the peripheral.

- If the peripheral fails to power on after these steps, contact ZONARE Tech Support.

Color or B/W printer fails to print

- Check that the printer has paper available.

- Ensure that the video cable is properly connected at the rear I/O panel on the SuperCart, and on the printer device.

- Check the "Audio/Video" settings (accessed via the system menus, through the path: **TOOLS** | **SYSTEM SETUP | DISPLAY** | **AUDIO/VIDEO**) on the Scan Engine, and then ensure that the proper video format (NTSC/PAL) is selected.

- If the printer fails to print after these steps, contact ZONARE Tech Support.

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19.3.4 Transducer Problems

Transducer not recognized by system (no B-mode imaging)

- To ensure a positive connection, disconnect the transducer and reconnect it.
- To determine a problem with the transducer or system, attach a different transducer to the Scan Engine.
- Disconnect the transducer. Power down the Scan Engine. Power the Scan Engine back on, and reinsert the transducer to test for functionality.
- Remove the Scan Engine from the SuperCart, and repeat the transducer removal/installation process.
- If system still fails to operate any transducers, contact ZONARE Tech Support.

19.3.5 Battery Charging Problems

Battery does not charge in Scan Engine, when docked in SuperCart

- Ensure AC power is present at SuperCart
- Ensure circuit breaker at the rear of the SuperCart is in the up (“ON”) position
- Verify DC voltages are present, by checking illumination of top 3 green LEDs at right/rear of Main/IO board (at rear of SuperCart).
- Battery discharge level may be too low (0%), to power internal battery intelligent electronics. Perform the following sequence to achieve sufficient trickle charging to return battery to workable state:
    - Undock Scan Engine from SuperCart, then re-dock again, leaving it for 30 seconds
    - Repeat this above dock/un-dock process (and delay), 3 more times
    - After third cycle, leave Scan Engine docked for 5 minutes to begin charging.
    - After 5 minutes, un-dock Scan Engine and remove battery to check charge state to verify charging process is now operational. If charging, re-dock Scan Engine and allow 1 hour for fully charging of the battery. If not, repeat previous dock/un-docking cycle sequence.

19.3.6 Imaging Problems

No/poor B-mode image

- Ensure that the brightness and/or contrast settings of the LCD display are set close to factory default levels on the SuperCart. Default settings are indicated by the asterisk (*) in the pop-up menu.

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- To ensure the quality of the grayscale resolution of the LCD display, use the grayscale test pattern (via the Diagnostic menu) that is available on the SuperCart. Ensure that all shades can be visualized, making small adjustments to brightness and contrast from factory defaults, as required, to see all intensities.
- Adjust the B-mode **gain** control.
- In the on-screen menu, adjust the **A Output** (acoustic power) level.
- In the on-screen menu, under the **Preset** tab, select one of the factory default settings (General, etc.) to determine possible maladjustment of user presets.
- Ensure an adequate supply of acoustic coupling gel and good patient/ transducer contact.
- Switch to a different transducer to determine the problem.

No/poor Color Mode image or PW Doppler

- Ensure that the brightness and/or contrast settings of the LCD display are set close to factory default levels on the SuperCart. Default settings are indicated by the asterisk (*) in the pop-up menu.
- To ensure the quality of the grayscale resolution of the LCD display, use the grayscale test pattern (via the Diagnostic menu) that is available on the SuperCart. Ensure that all shades can be visualized, making small adjustments to brightness and contrast from factory defaults, as required, to see all intensities.
- Make adjustments to the various Doppler controls (**gain, filter, scale)** to attempt to resolve problem.
- Ensure that the scanning angle between the transducer face and the direction of blood flow is optimized.
- In the on-screen menu, under the **Preset** tab, select one of the factory default settings (General, etc.) to determine possible maladjustment of user presets.
- Ensure that there is an adequate supply of acoustic coupling gel and good patient/transducer contact.
- Switch to a different transducer to determine the problem.

19.3.7 General Operation Problems

Function (F1-F4) key(s) do not operate

- Using the on-screen menu, follow the path: **TOOLS** | **SYSTEM SETUP** | **FUNCTION KEYS**) to access the menu for the user configuration of the assignments of the function keys.
- The function keys (F-keys) on the SuperCart (F1-F4) can be configured independently from the function keys on the standalone Scan Engine (F1-F2)

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Unable to modify existing User Preset (shown as *grayed out* on screen)

- Ensure that the desired user preset has been previously (prior to attempting to modify it) selected as the active preset.

19.3.8 DICOM Connectivity/Communications Problems

Z.ONE will not communicate with target DICOM" Store" or "Print" device

- Check Networking ICON on lower/right corner of main imaging screen of **Z.ONE**, to verify hardware connection is active (no "**X**" over ICON). Check hardware cabling, network equipment, and/or configuration, as necessary.

- In **General**" configuration page, verify DICOM Application Title, and IP address/gateway/netmask parameters are entered correctly, and correspond with those assigned to **z.one** ultrasound system by the IT Admin at the install site.

- In the DICOM" **Network Store**" and "**Printer**" configuration pages, verify AE Title, IP Address, and Port Number parameters are entered correctly, and match those assigned to the corresponding device by the IT Admin for facility, at install site.

- Using the "VERIFY" selection in the DICOM configuration menus, for the Network Storage or Printer Administration screens (as applicable to device attempting to be connected), test for successful handshaking of connection.

- Using another device (PC, etc.) on same domain on hospital network, perform a "PING" operation to the IP address assigned for the **z.one**, in the "General" DICOM configuration page, to test for TCP/IP connectivity.

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19.4 System Status LED Definitions

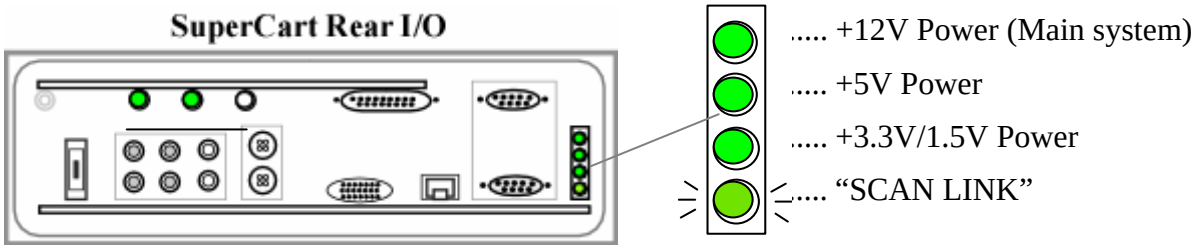
19.4.1 SuperCart

19.4.1.1 Rear I/O Panel

The LEDs shown in this section (located on the Rear I/O Panel of the SuperCart) can be used to assist in troubleshooting problems related to the DC power supplies, and unsuccessful docking of the Scan Engine in the SuperCart.

The top three LEDs (in the vertical column) are the DC power supply (+12V, +5V, +3.3V) status LEDs. All three of these LEDs should be illuminated at all times, if the SuperCart is connected to an AC power source and the circuit breaker (at the rear of the unit) is in the "on" position.

NOTE: *The +12V power supply that is monitored by the LED on the Rear I/O panel is main system +12V (20A) power. A separate +12V power supply (6 Amp) is used to provide power for the SuperCart's (Barco) LCD Display. This 6A power supply does NOT have a status LED on the Rear I/O panel. An internal LED (visible through the vents in the plastic case of the Barco LCD Display), can be used for determining the presence of this +12V power output from the SuperCart's internal DC power supply.*



+12V: The +12V Power LED should be illuminated any time main system power is applied to the SuperCart, indicating the presence of proper output from the +12V (20A) power supply.

NOTE: The +12V (6A) power supply, used for powering the Barco LCD Display on the SuperCart, is NOT detected by status LED's on the Rear I/O panel.

SCAN LINK: The "SCAN LINK" status LED (bottom LED of the vertical column) should begin to "flash", within 5 seconds of the successful docking of the Scan Engine into the pocket of the SuperCart. This indicates the SuperCart has detected the presence of a fully docked Scan Engine and is in a waiting state, prepared to fully power on the **z.one**

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when the user presses the power-on button on the Scan Engine. The flashing of this LED indicates that BOTH optical sensors in the Scanner pocket (Eject latch sensor, and scanner carrier bottom-out sensor) have been successfully detected.

Once the user presses the power-on button on the Scan Engine, and the **z.one** is fully powered on, the "SCAN LINK" LED should switch to a solid "on' condition. This LED should remain illuminated at all times while the **z.one** is fully powered-up into an operational mode.

The three LEDs located horizontally across the faceplate of the Rear I/O panel, are physically located on the I/O Board (rather than the Main Board portion of the Rear I/O assembly). The "INIT" (initialize) and "DONE" LEDs indicate the active operational status of the FPGA logic device (the sole intelligence) on the Main Board. These two LEDs should illuminate shortly after main power is applied to the SuperCart (the circuit breaker being turned "on"), and remain on at all time while the SuperCart has power applied. The absence of these LEDs, in conjunction with the three power status LEDs on the Rear I/O being illuminated as normal, indicates the likelihood of a failure on the Main/IO Assembly (P/N: 80125).

The "DIAG" LED is not currently supported for status functionality, and therefore should not be illuminated once the **Z.ONE** has completed boot-up.

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19.4.1.2 Scan Engine Interface Board (Scanner Pocket area)

The following two LEDs on the Scan Engine Interface board (visible at the bottom of the Scanner Pocket), can be used to troubleshoot problems related to unsuccessful docking of the Scan Engine in the SuperCart. In order to easily view these LEDs, the following troubleshooting steps should be followed.

1. Remove the Scan Engine from the SuperCart

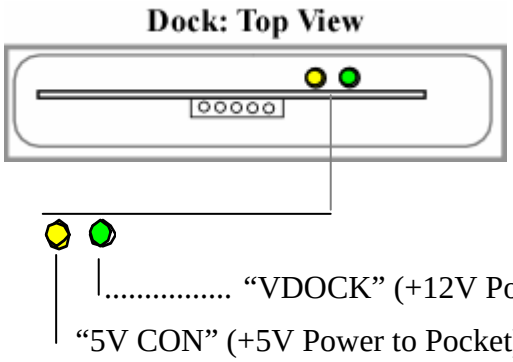
2. Ensure the SuperCart is connected to AC power, and the circuit breaker at the back of the system is turned "on" (this can be verified by the illumination of the LEDs on the rear of the Main Board)

3. Verify that the amber (yellow) LED is illuminated. This LED indicates the presence of +5V being supplied from the SuperCart chassis to the Scanner Interface Board (in the pocket). This LED should always be "on" when the SuperCart has power applied (main circuit breaker on)

4. Using your hand, press the Scanner pocket docking mechanism fully downward until it lightly seats against its mechanical stop. After approximately 3 seconds, the green LED should illuminate, indicating a successful docking detection (by the opto-sensor at the bottom of the Scanner Pocket), and successful detection of the Eject latch being released (second optical sensor).

   NOTE: The turning on of this green LED is a "**AND**" function, where BOTH optical sensors must be read successfully in order for the Cart Main Board logic to activate the LED. If either sensor fails, the LED will not illuminate.

5. While continuing to hold the docking mechanism fully down, and while observing the green LED, press (and hold) the Scan Engine eject button. The green LED should turn "off" when the eject button is held down, and illuminate again when this button is released. This indicates the proper operation of the opto-sensor on the eject mechanism, and subsequent proper removal of +12V power to the scanner pocket (by the control of the Main Board) during the Scan Engine ejection process


Dock: Top View
..... "VDOCK" (+12V Power to Pocket) – "on" only when Scanner is docked
"5V CON" (+5V Power to Pocket) – "always on", when Cart has power

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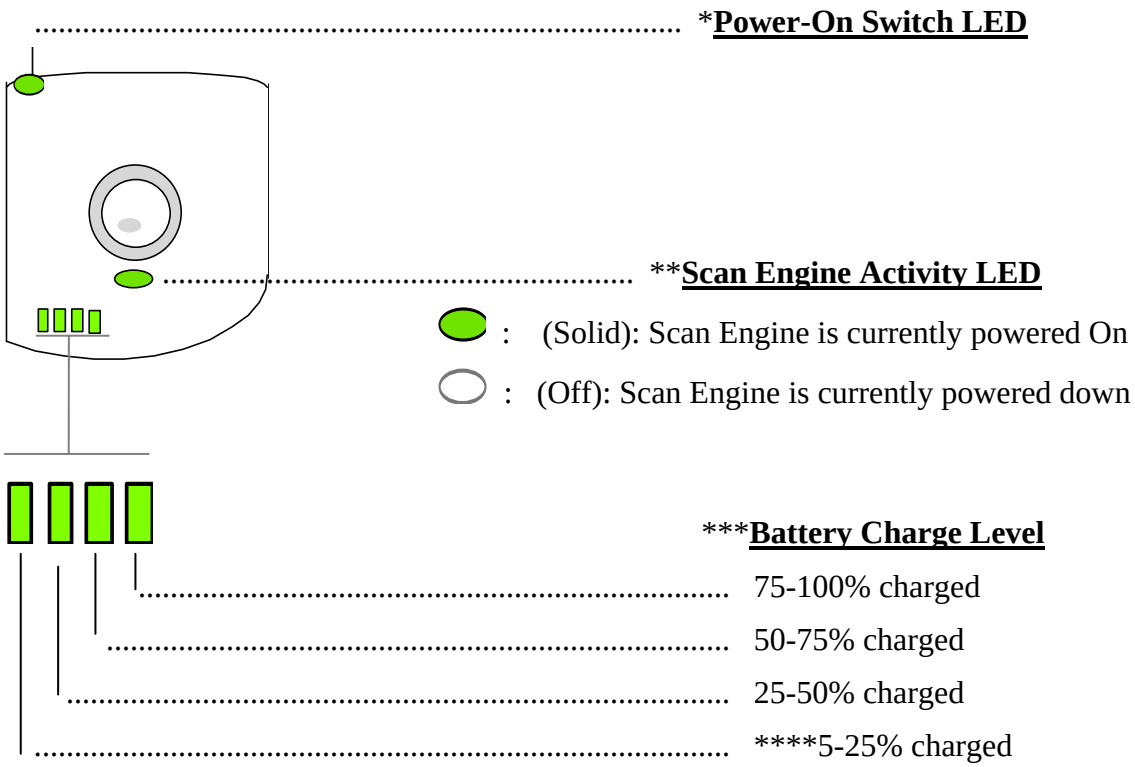
19.4.2 Scan Engine



***POWER-ON SWITCH LED – STATUS INFORMATION:**

The Power-On Switch LED is directly activated by the PIC (Controller) device on the Power Board in the Scan Engine, upon detection of the pressing of the Power On/Off switch. Lack of illumination of this LED (in conjunction with the Scanner not powering on), indicates one of the following:

1. Total loss of source power (8.4V) to the Scan Engine, due to a completely depleted battery power, or no power from SuperCart - if docked.
2. Power On/Off switch on Scan Engine is defective
3. "Always On" power output from Power Board in Scan Engine has failed
4. Low-level *Bootloader* software is corrupted (requires Scan Engine replacement in field)

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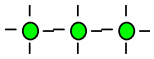
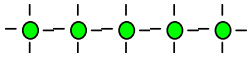
****SCAN ENGINE ACTIVITY LED – ERROR CODES:**

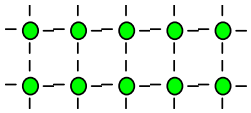
The MPC (Controller) in the Scan Engine blinks this LED at a 1Hz. Rate, formulating an error code (prior to initiating a system shutdown) if any of the following hardware error conditions occurs:



3 Blinks: ..... Low voltage power fault



5 Blinks: ..... Internal RAM or Internal Flash memory fault



10 Blinks: ..... Video system failure (FPGA device)

*****BATTERY CHARGE LEDS - BASIC NOTES:**

Note 1:

Battery charge level LEDs are ONLY illuminated momentarily (approximately 5 seconds) and then go out, when one of the following conditions occurs:

1. The battery pack is initially inserted into the Scan Engine
2. The Scan Engine is initially powered-on

Note 2:

The Scan Engine will alert the User (message on LCD display and flashing charge level LED), and automatically begin a controlled shutdown sequence, when the battery charge level diminishes to 5%. All current settings will be saved to flash memory, prior to the automatic shutdown sequence.

******BATTERY CHARGE LEDS - SPECIAL NOTE:**

When battery voltage is depleted down to the levels listed below, the battery power status indicator, displayed on the LCD Monitor of the Scan Engine, will do the following:

1. <10%: Status display will be **AMBER** and “flash”
2. =5%: Status display will turn **RED**, an impending shutdown warning message will be displayed on the Monitor, and after 1 minute, the system will begin a shutdown sequence.

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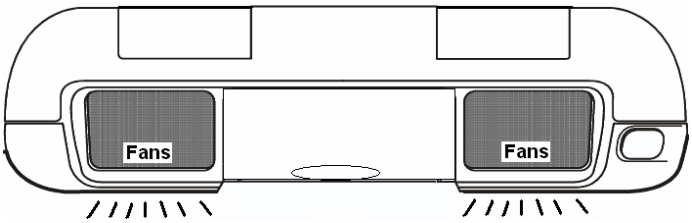
19.5 Scan Engine Fan Operation



The operating speeds of the two (2) fans on the Scan Engine are variable; driven by the dynamic changes in cooling requirements within the Scan Engine. Four (4) dedicated thermal sensor devices, strategically located at various locations inside the Scan Engine, provide constant temperature status information to the Processor (PIC device).

In the case where a temperature sensor error condition occurs, both fans will be set to run at MAXIMUM speed by the Processor.

19.6 SuperCart LCD Display (Barco) Troubleshooting

19.6.1 *Image display quality problems*

Symptom	Solution
Images look too bright or saturated	Check the ***BRIGHTNESS***, ***CONTRAST*** and ***LUMINANCE*** settings, using Barco pop-up menu. Verify they are set at (or close to) the factory default setting (indicated by an asterisk * in the menu)
Annotations look blurry	Perform the **FULL AUTOSET** (***Gain/Phase***) calibration portion of the Barco calibration procedure (Refer to Display Replacement Only: "Full AutoSet" Service Procedure, provided earlier in this manual)
Display shows an undesirable color tint	Check the ***COLOR TEMPERATURE*** settings, in the Barco pop-up menu. Verify they are set at (or close to) the factory default setting (indicated by an asterisk * in the menu, and in **Figure 63: Barco Display - "OSD" Menu Specifications Table**)

NOTE:

If the LCD Display (Barco) on the SuperCart is replaced in the field, the **FULL AUTOSET *(Gain/Phase)*** calibration process must be performed on the new unit, in the system.

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20 REPAIR PROCEDURES

20.1 Foreword

The repair procedures described in this portion of the Service Manual should be performed ONLY by a ZONARE trained service personnel (Service Engineer, Bio-Med, etc.).

20.2 Recommended Tools

Tool Description	Size	Qty.	Where used
Screwdriver, flat blade, small tip, extra-long	3mm blade, 12” shaft, thin blade	1	Scan Engine Pocket cable connector screws
Screwdriver, flat blade, medium tip, extra-long	5mm blade, 12” shaft, std. thick	1	Scan Engine Pocket Assy mounting fasteners
Screwdriver, flat blade, medium tip, std. length	3mm blade, 6” shaft, std. thick	1	General use
Screwdriver, flat blade, large tip, std. length	8mm blade, 6” shaft, std. thick	1	General use
Screwdriver, Phillips, small-med. tip std length	#1, 4” shaft	1	User interface top cover, speaker housing top cover, display covers, etc.
Screwdriver, Phillips, medium tip, std length	#2, 6” shaft	1	4 display to mount plate screws
Screwdriver, Phillips, small-med tip, extra-long	#1, 12” shaft	1	6 screws holding rear plate, covering release cable area
TORX Screwdriver (T6)	T6 x 60	1	General needs
TORX Screwdriver (T8)	T8 x 60	1	AC circuit breaker screws
TORX Screwdriver (T10)	T10 x 60	1	LCD monitor rear covers screws
TORX Screwdriver (T27)	T27	1	Screws securing metal plates under UI and Speaker area
Pliers, Needlenose, Long-Narrow jaws	>3” long jaws	1	General access, screw pick-up
Pliers, Needlenose, Standard jaws	3” long jaws	1	Rubber probe holder donut insertion
Pliers, Diagonal Cutters, small	Small jaws	1	General cutting of tie wraps, etc.
Pliers, Diagonal Cutters, medium	Standard jaws	1	General cutting larger wires, etc.
Wire stripper, multi-sized	Multi-size	1	General wiring needs
T-Handle Hex ball driver, 4mm, 12” shank,	4mm x 12”	1	Scanner Pocket retaining screws
T-Handle Hex/Ball Driver	5mm x 8”	1	Display pedestal mount bolt
Allen wrench set (metric)	2mm-8mm	1	Loosening of tight Allen bolts

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Nut-Driver Set (metric)	Multi-sizes	1 set	5.5mm needed for AC Outlet box
Combination Wrench Set, small sizes (metric)	Multi-sizes	1 set	General use
Flashlight, Mini-Mag	6” size	1	Illuminating tight access areas
Magnetic pick-up tool	Telescoping	1	Retrieval of hardware

20.3 Hardware Service/Replacement Procedures (SuperCart)

20.3.1 Main - I/O Board Assembly - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80207..... Assy, SuperCart Main Board w/IO & Panel

Required Tools

- ESD protection equipment (wrist grounding strap, anti-static surface)
- Philips head screwdriver

IMPORTANT NOTE

Due to requirements for matching the video output signal of the Main-I/O board to the calibration settings in the 13” LCD (Barco) Display monitor, it is required to perform the “**Full Autoset**” portion of the 13” LCD (Barco) Display calibration procedure (provided in the previous chapter of this manual), anytime the Cart Main-I/O board is replaced in the field.

Procedure

STEPS:

1. Ensure the **z.one** is powered “OFF”
2. Place AC circuit breaker, located at the rear of the SuperCart, in the “OFF” (down) position
3. Disconnect the main AC power cord from rear of the SuperCart
4. Disconnect all external cables (network, video, etc.) from the I/O panel at the rear of the SuperCart
5. Using a Philips head screwdriver, loosen the two (2) thumbscrews that secure the Main-I/O board assembly to the chassis

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CAUTION

- *To prevent potential static shock damage to sensitive electrical components on Main Board, use of all proper ESD (Electro Static Discharge) protection (wearing grounded wrist strap) and avoid direct contact with electronics during handling.*

6. Firmly grasp the thumbscrews and pull firmly outward to unplug the Main-I/O board from its connection to the SuperCart backplane board.
7. Handling by the metal exterior frame (only), remove the Main-I/O board assembly out of the SuperCart

8. Reverse above order for installation of replacement Main-I/O board assembly utilizing the same ESD protections, by only handling the new Main-I/O board by the exterior frame

IMPORTANT

NETWORKING:

- *The MAC ("Physical" TCP/IP address) address for the **Z.ONE** is stored in EPROM on the Cart Main Board. To ensure proper network functionality is maintained, it is required that the replacement Main Board be pre-programmed with the MAC address that was originally assigned by ZONARE, at the time of first Customer shipment of the specific serial number SuperCart.*
- *MAC address programming of the Main Board (to match the originally assigned MAC address for a specific serial number SuperCart) should have occurred at the factory, prior to shipment of the replacement board. However in the case where the MAC address requires programming in the field, it is possible to perform this procedure with the assistance (over the telephone) of ZONARE Tech Support.*

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20.3.2 13” LCD (Barco) Display - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80215-00 .....Display, 13” Flatscreen, LCD Display (Zonare)

Required Tools/Equipment

- #2 Philips screwdriver
- Small flat-blade screwdriver
- T10 - Torx driver
- Foam pad (approx 12” x 12”)
- 4” nylon ty-wraps (Qty. 4)

IMPORTANT NOTE

Due to requirements for matching the video output signal of the Main-I/O board to the calibration settings in the 13” LCD (Barco) Display monitor, it is required to perform the “**Full Autoset**” portion of the 13” LCD (Barco) Display calibration procedure (provided in the previous chapter of this manual), anytime the display is replaced with a new unit in the field.

Procedure

STEPS:

1. Ensure the **z.one** is powered “OFF”
2. Place AC circuit breaker, located at the rear of the SuperCart, in the “OFF” (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the four (4) Philips-head screws that are retaining the plastic display hinge back cover, and remove cover

5. Remove the four Philips-head screws that retain the LCD Display to the metal hinge assembly, ensuring to support the LCD Display while removing the last screw

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6. Fold the LCD Display forward, to its down-most position, resting the screen surface on some form of protective pad material

7. Remove the Torx screws securing each of the two plastic half-shell cosmetic covers, at the back of the LCD Display

8. To remove each of the two plastic half-shell covers, place the head of the Torx driver into the empty screw hole (inserted only the depth of the cover plastic), and carefully pry upward/outward. This is being done to raise the cover sufficiently for the plastic locking tab (at the outside edge of the cover) to clear the lip on the main display housing. Once each cover is slid free, remove it from the back of the LCD display

9. After marking their location on the display housing (to enable correct assembly during re-installation), cut all tie-wraps securing the cables to the back of the display housing

10. Disconnect all four of the cables (+12V Power, S-Video, Composite video, SVGA/Serial Control), at their attachment points on the back of the LCD Display. The SVGA cable requires loosening of the two slotted-type retaining screws, prior to cable removal

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11. Remove the old LCD Display and place the replacement display in position on the protective pad, aligning it with the screw holes in the metal hinge plate
12. Reverse the disassembly procedure for installing the new LCD Display, installing plastic tie wraps at the original locations (to secure the cables to the back of the housing)

20.3.3 User Interface Assembly - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80221-00 .....Assy, User Interface, SuperCart (Zonare)

Required Tools/Equipment

- #2 Philips screwdriver

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Place AC circuit breaker, located at the rear of the SuperCart, in the "OFF" (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the two (2) rubber probe holder grommets from the locations on the User Interface housing, as shown below.

5. Remove the gray rubber bumper strip, located at top edge of the keyboard assembly, by gently prying it upward out of its locating holes in the UI housing. This will expose two additional Philips-head screws (down in recessed holes) that retain the User Interface to the main chassis.

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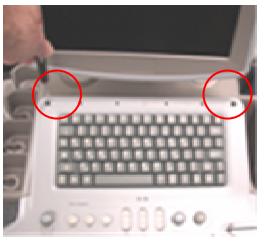
6. Remove the nine (9) M3 x 6 Philips-head screws (up from the bottom) that secure the assembly to the SuperCart chassis. Remove the two (2) upper securing M3 x 6 Philips-head screws from their respective hole locations at the top corners of the User Interface Assembly



CAUTION

To prevent potential static shock damage to sensitive electrical components on UI board, use of all proper ESD (Electro Static Discharge) protection (wearing grounded wrist strap) and avoid direct contact with electronics during handling.

7. Lift upward partially on the User Interface assembly, and while holding it in position, disconnect the end of the user interface cable that attaches to the mating connector on the User Interface board

8. Completely remove the User Interface assembly from the SuperCart.
9. Reverse the previous steps for installation of the replacement assembly.

NOTE: *The rubber strip that covers the two mounting screws on the top of the UI, is not symmetrical, and should only be installed in one way. The strip should be installed with the "beveled edge" surface side, facing towards the front of the Cart. Attempting to mount the strip reversed direction will result* in the strip not wanting to lay flush in the recessed groove in the UI panel.

10. Power on the Z.ONE and test the operation of the trackball and all keys on the User Interface, to ensure full functionality.

20.3.4 Speaker Assembly - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80156 ..... Assy, Speakers

Required Tools/Equipment

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- #2 Philips screwdriver
- Small flat-blade screwdriver
- Long handled flat-blade screwdriver (3mm width blade, 12” shaft, thin blade)
- 4mm, Allen / Ball Wrench or T-Handle Hex driver
- T8 – Torx driver
- T10 – Torx driver
- T27 – Torx Bit Socket (1/4” Drive)
- ¼” Drive Socket Wrench
- Foam Pad (approx 12” x 12”)

Overview of Procedural Steps:

- *Removal of 13’’ LCD Display - (Pre-Requisite)*
- *Removal of User Interface Assembly - (Pre-Requisite)*
- Removal of Hinge Housing and Cosmetics
- Removal of Top Rear Panel Cosmetics
- Remove / Replace Speakers

Removal of the 13” LCD Barco Display:

- Refer to removal of 13’’ LCD Display Procedure: Section 20.3.1

Removal of the User Interface Assembly:

- Refer to removal of User Interface Assy Procedure: Section 20.3.3

Removal of the Hinge Housing and Cosmetics

1. Remove six (6) #1 Philips head screws on hinge housing top.

2. Remove T27 – Torx screw from hinge housing and remove hinge housing assembly from support base.

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3. Remove the cables and set the hinge housing assembly aside.

Removal of the Top Rear Panel Cosmetics

1. Remove the rubber transducer inserts.

2. Remove seven (4) #1 Philips screws located on the top of the top rear panel and three (3) #1 Philips screws from below the transducer holder area.

3. Remove three (3) T8 – Torx screws from rear of cart near rear handle.

4. Lift top rear panel vertically and remove the LCD monitor cables from the cosmetic panel so that they are free.
5. Disconnect the speaker cable and remove the top rear panel.

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Removal of the Speaker Assemblies

1. Remove three (3) #1 Philips screws on each speaker mounting bracket.

2. Remove speaker from the cosmetic panel.
3. Separate the speaker from the speaker grill with a gentle pull. (a straight-slot screwdriver may be used if required.)

4. Remove three (3) #1 Philips screws retaining the speaker to the mounting bracket.

5. Repeat steps 1 thru 4 (Removal of Speaker Assemblies) for the other speaker.
6. Reverse the procedures for installation of the speakers and other components removed during this procedure.

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20.3.5 Scan Engine Pocket Assembly - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80239-00 .....Assy, Scan Engine Pocket, SuperCart (Zonare)

Required Tools/Equipment

- Long handled flat-blade screwdriver (3mm width blade, 12" shaft, thin blade)
- 5mm, 12" shank, T-Handle Hex driver

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Place AC circuit breaker, located at the rear of the SuperCart, in the "OFF" (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the Scan Engine from the SuperCart (if currently docked)
5. Remove the six (6) 5mm allen-head retaining screws that secure the Scanner pocket assembly to the SuperCart chassis

6. Get the thin tipped, flat-blade screwdriver, to have at the ready

CAUTION

It is very important to follow the following step closely, in not attempting to completely pull the Scanner Pocket Assembly away from its mounting location on the SuperCart, until AFTER disconnecting the attachment cable.

7. While supporting the weight of the Scan Engine Pocket Assembly, slide the assembly along the guide rails (away from the SuperCart) just far enough to gain access to the connector at the Backplane, for the attachment of the interface cable

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8. Loosen the two (2) screws on the cable connector (DB-15), and pull the cable free from the Backplane's mating connector

9. Completely remove the Scan Engine Pocket Assembly from the SuperCart, and set aside
10. Reverse above order for installation of replacement Scanner Pocket Assembly

---

20.3.6 HSSL Cable - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80157 ..... Assy, HSSL Cable

Required Tools/Equipment

- Long handled flat-blade screwdriver (3mm width blade, 12" shaft, thin blade)
- 4mm, Allen / Ball Wrench or T-Handle Hex driver
- Diagonal Cutter
- Cable Ties

Overview of Procedure

- *Removal of Scan Engine Pocket - (Pre-Requisite)*
- Removal of HSSL Cable

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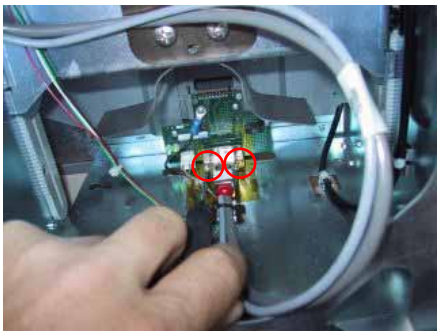
Removal of the Scan Engine Pocket Assembly:

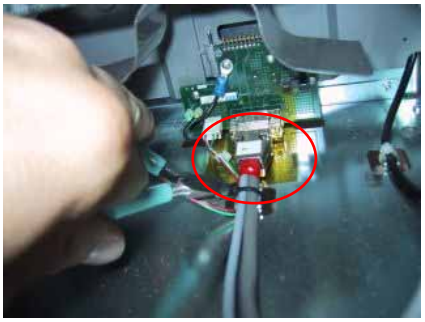
- Refer to Scan Engine Pocket Assembly - Removal/Replacement (SuperCart)

Removal of the HSSL Cable

1. Using the small flat blade screwdriver, loosen the two (2) screws that secure the HSSL Cable to the Scanner Interface Board in the Scanner Pocket.



2. Cut the Cable Tie at the base of the Scan Pocket.



3. Remove the HSSL Cable from the Scan Pocket.
4. Reverse the disassembly procedure, for installing the HSSL Cable Assy and any other components removed as a part of this procedure.

20.3.7 Backplane Board Assy - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80127 ..... Assy, Backplane Board

Required Tools/Equipment

- #2 Philips screwdriver
- Small flat-blade screwdriver
- Long handled flat-blade screwdriver (3mm width blade, 12” shaft, thin blade)

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- 4mm, Allen / Ball Wrench or T-Handle Hex driver
- T8 – Torx driver
- T10 – Torx driver
- T27 – Torx Bit Socket (1/4” Drive)
- ¼” Drive Socket Wrench
- Foam Pad (approx 12” x 12”)
- ESD protection equipment (wrist grounding strap, anti-static surface)

Overview of Procedure

- *Removal of 13” LCD Display - (Pre-Requisite)*
- *Removal of User Interface Assy - (Pre-Requisite)*
- *Removal of Scan Engine Pocket - (Pre-Requisite)*
- *Removal of Main - I/O Board Assy - (Pre-Requisite)*
- Removal of LCD Display Tilt / Swivel Assy and Cosmetics
- Removal of Upper UI Panel Cosmetics
- Removal of Tilt / Swivel Support Base
- Removal of UI Area Sheet Metal
- Removal of Backplane Assy

Removal of the 13” LCD Display:

- Refer to 13” LCD (Barco) Display - Removal/Replacement (SuperCart)

Removal of the User Interface Assembly:

- Refer to User Interface Assembly - Removal/Replacement (SuperCart)

Removal of the Scan Engine Pocket Assembly:

- Refer to Scan Engine Pocket Assembly - Removal/Replacement (SuperCart)

Removal of the Main-I/O Board Assembly:

- Refer to Main - I/O Board Assembly - Removal/Replacement (SuperCart)

Removal of the LCD Tilt / Swivel Assembly and Cosmetics

1. Remove six (6) #1 Philips head screws on Tilt / Swivel Cover.

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2. Remove T27 – Torx screw from Tilt / Swivel and remove Tilt / Swivel assy from support base.

3. Remove the cables from the Tilt / Swivel assy and set the Tilt / Swivel assy aside.

Removal of the Upper UI Panel Cosmetics

1. Remove the transducer inserts.

2. Remove seven (4) #1 Philips screws located on the top of the Upper UI Panel Cosmetics and three (3) #1 Philips screws from below the transducer holder area.

3. Remove three (3) T8 – Torx screws from rear of cart near rear handle.

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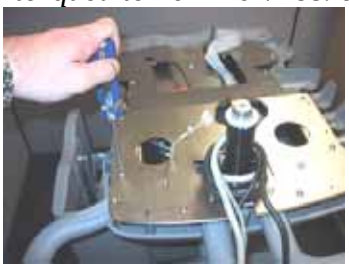
4. Lift cosmetic panel vertically and remove the LCD monitor cables from the cosmetic panel so that they are free.
5. Disconnect the speaker cable and remove the cosmetic panel.

Removal of the Tilt / Swivel Support Base

1. Remove six (6) T27 Torx screws.

***NOTE**: This may require the use of a T27 Torx Bit Socket and appropriate Socket Wrench to break loose. The screws are initially torqued to 107 Inch/Lbs. or 12.09 Newton/Meters.*



2. Un-wrap the LCD monitor's cables from the Tilt / Swivel support shaft. (Make note of how they were wrapped for re-assembly.)
3. Remove the Tilt / Swivel Support Base and set aside.

Removal of the UI Area Sheet Metal

1. Remove eight (8) T27 Torx screws.

***NOTE**: This may require the use of a T27 Torx Bit Socket and appropriate Socket Wrench to break loose. The screws are initially torqued to 107 Inch/Lbs. or 12.09 Newton/Meters.*

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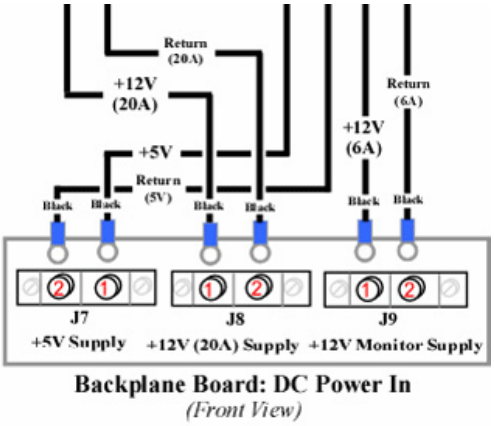
2. Remove the UI Area Sheet Metal and set aside.

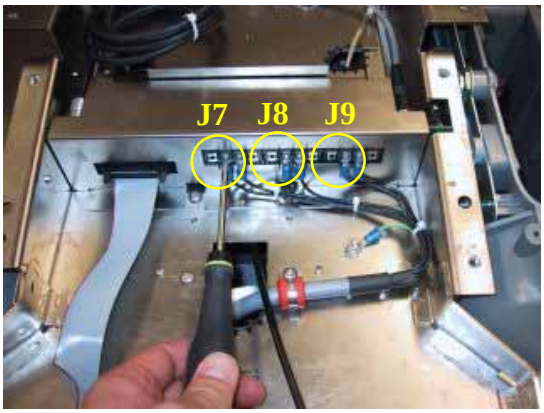
Removal of the Backplane Assy

1. Remove six (6) Philips-head screws that connect the DC power (+5vdc Supply to J7, +12vdc (20A) Supply to J8, and +12vdc Monitor Supply to J9).

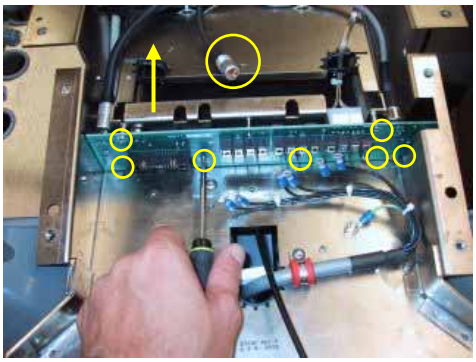
***NOTE**: Ensure you mark which the wire with the connector it was secured to so that they can be returned to the proper location during assembly.*



Backplane Board: DC Power In
(Front View)



2. Disconnect the UI cable assy and set aside.
3. Remove the three (3) Philips-head screws that secure the Backplane sheet metal cover to the base of the UI tray, and set the sheet metal aside.
4. Disconnect the Comp Video from J5 on the Backplane, and then remove the seven (7) Philips head screws securing the Backplane to the Cart.



5. Slide the Backplane away from the alignment pins (ensure that cables do not snag while doing this – the remaining cables will be disconnected once the Backplane is free and clear.)

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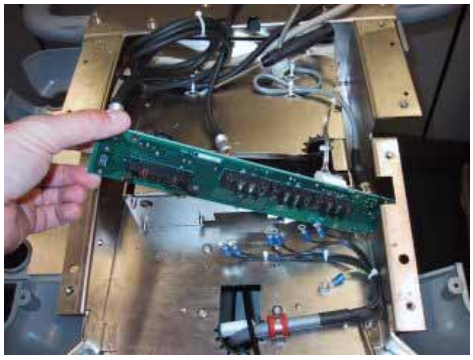

6. Disconnect the remaining cables and set the backplane aside.
7. Reverse the disassembly procedure, for installing the Backplane Assy and any other components removed as a part of this procedure.

20.3.8 Brake Push-Cam - Removal/Replacement (SuperCart)

Required Parts

- P/N: 31867-00 ..... Push Cam

Required Tools/Equipment

- #2 Philips screwdriver
- Small flat-blade screwdriver
- White lithium grease (or equivalent)

Procedure

STEPS:

1. Ensure the **z.one** is powered “OFF”
2. Place AC circuit breaker, located at the rear of the SuperCart, in the “OFF” (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the Scan Engine from the SuperCart (if currently docked)
5. Tilt SuperCart rearward, onto its back, resting on the rear push handle

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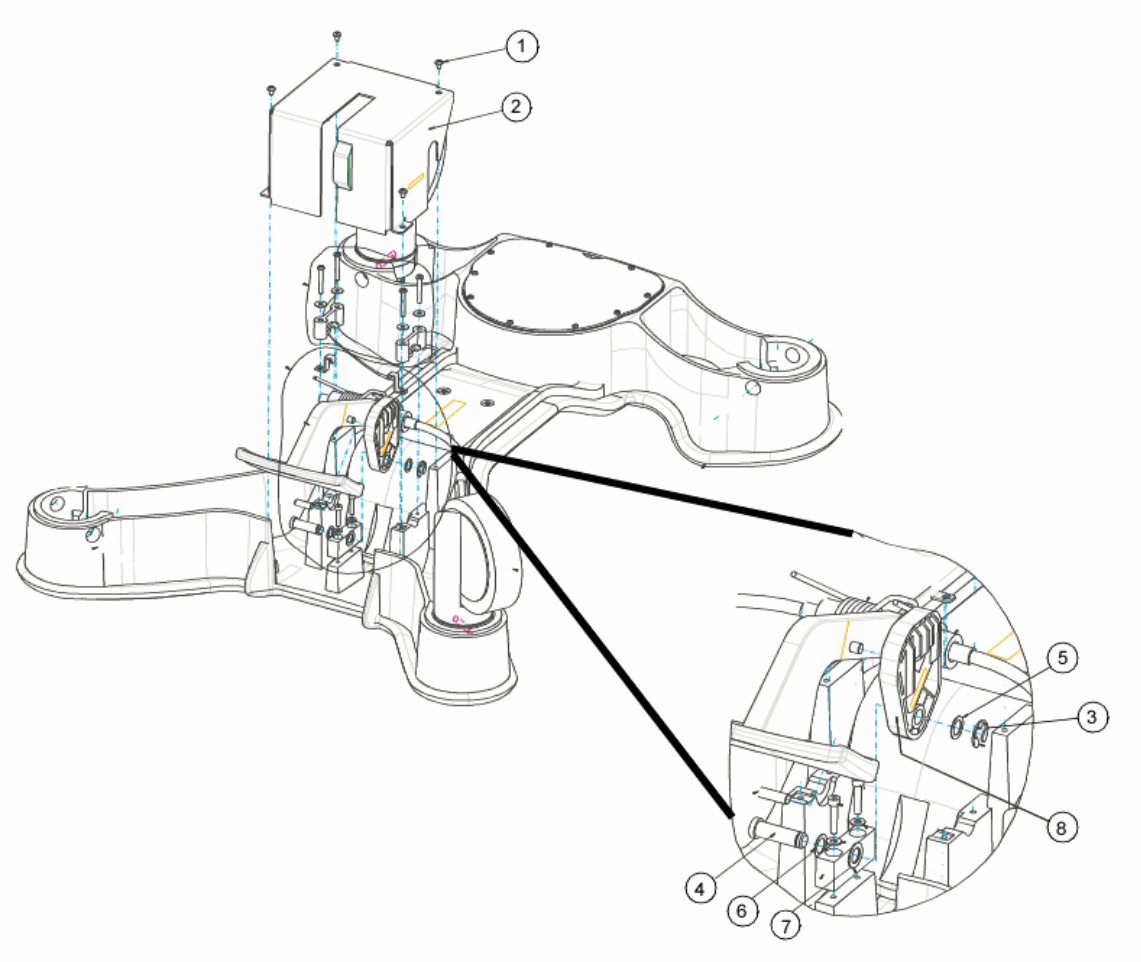

6. Remove the four Philips-head screws (1) retaining the brake assembly cover plate (2), and remove the plate to expose the brake mechanism
7. Remove the snap E-clip snap ring (3), at the end of the push cam pivot pin (4)
8. Slide the pivot pin (4) out of the brake arm, catching the push cam (8) and noting the location/order of the three washers (5, 6, 7), as it's disassembled
9. Apply a then layer of white lithium grease on all surfaces of the slotted track, inside the push cam
10. Replace the failed push cam with the new part; installing the washers in their original locations, and reversing all previous steps to complete the installation

---

20.3.9 Casters - Removal/Replacement (SuperCart)

Required Parts

- P/N: 31525 ..... Caster, 5", Directional Lock (Front)
- P/N: 31526 ..... Caster, 5", Fixed (Rear)

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Required Tools/Equipment

- 10mm Deep Socket w/ Ratchet
- LocTite 242 (blue) thread locking compound

Overview of Procedure

- Remove Caster
- Set Brake and/or Swivel Lock position
- Install Caster

Removal of the Caster:

STEPS:

1. Ensure the **z.one** is powered "OFF".
2. Place AC circuit breaker, located at the rear of the SuperCart, in the "OFF" (down) position.
3. Disconnect the main AC power cord from the rear of the SuperCart.
4. Fold the LCD display screen down to a horizontal position, for protection from moving during tilting of Cart.
5. Lock the brake mechanism (front wheels) to keep the Cart from rolling.
6. On a soft surface (carpet, etc.) tilt the Cart forward, until it is horizontal, resting on the two front push handles for support

CAUTION

The Cart may be heavy and care should be taken while tilting forward, use two people if necessary to avoid injury.

7. Using a 10mm socket and ratchet, remove the hex-head bolts (through the access holes in the side of feet on the main chassis) that retain the wheel assembly to the Cart.

8. Note the position of the brake or swivel for the caster being removed. Remove the caster and associated hardware and set aside.

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***NOTE**: The front casters have a brake actuating cable. The position of the brake should be noted as well as the position of this actuating cable. This is to ensure that when the brake is set, that the caster brake actuator sets properly. The rear casters will lock in one direction and not swivel and this needs to be noted as well so that can be set on the new casters if required.*

Set Brake and/or Swivel Position

9. Verify/set the position of the new replacement caster's brake or swivel actuator. Locate the large Allen-head screw (swivel release screw) that is located on the shaft area of each of the casters.
10. Insert a 7/16'' (11mm) Allen wrench into the hex brake/swivel locking release screw, and rotate it to the appropriate position noted in Step 8.

***NOTE**: If unlocking the swivel on the rear casters is desired, rotate the hex screw 90 degrees.*

Install the Caster

11. Reverse the procedures for installation of the Caster and other components removed during this procedure. Ensure that the brake is set to the correct position as well as the caster prior to install.
12. Reinstall each wheel back into the Cart, and fully secure the 10mm attachment bolt. (Applying LocTite 242 thread locking compound to the threads of the bolt is recommended).
13. Once installation is complete, Tilt the Cart back up onto its wheels, and release the brake mechanism.
14. Verify smooth operation and pivoting of the Cart through all movements.
15. Verify that the brake functions correctly and that each caster locks and the brake functions when it is set.

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20.3.10 SuperCart Power Supplies

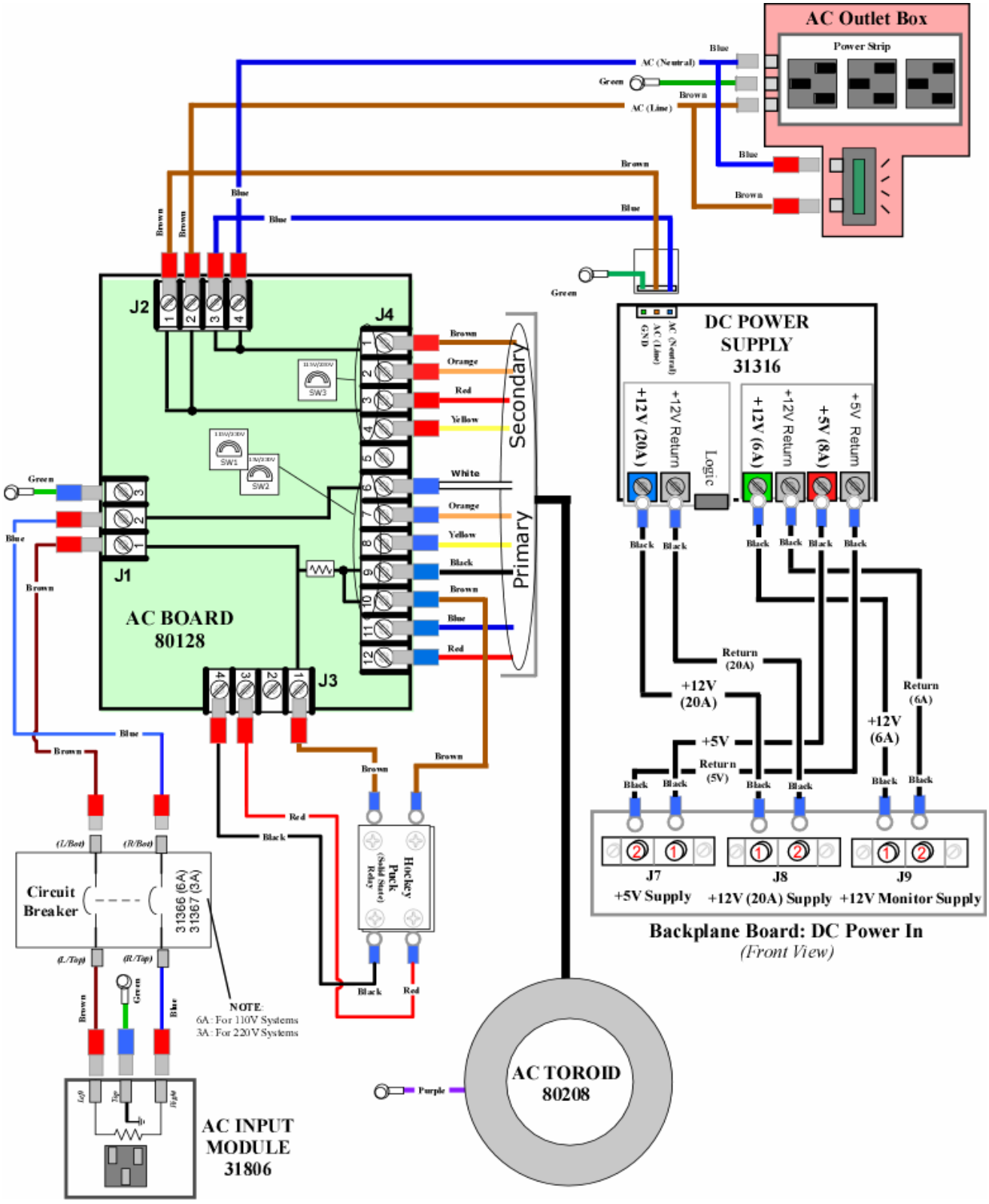

Figure 64: SuperCart Backpack Overall Power Connections Diagram

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20.3.10.1 AC Power Board - Removal/Replacement (SuperCart)

Required Parts

- P/N: 80128.....Assy, SuperCart AC Board

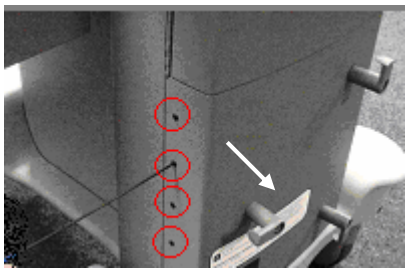
Required Tools

- #2 Philips-head screwdriver
- T8 - Torx driver

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Place AC circuit breaker, located at the rear of the SuperCart, in the "OFF" (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the ten (10) screws securing the power compartment access plate, and remove plate to expose power supply compartment.



5. Remove terminal connections (by pulling on spade connectors) for all wires attached to AC Power Board.
6. Using a Torx driver, remove the four screws mounting the AC Power Board to the chassis, and remove old board from the SuperCart
7. Prior to installation of new AC Power Board, verify the three (3) 110/220V power configuration rotary switches are in the correct position, corresponding to the local power requirements.
8. Reverse above order for installation of new AC Power Board (refer to SuperCart Power Distribution Diagram, in Chapter 8 of this manual, and/or wire color connection information silk screened on surface of AC Power board, to verify proper wire connectivity during installation).

20.3.10.2 DC Power Supply - Removal/Replacement (SuperCart)

Required Parts

- P/N: 31316.....DC Power Supply (+5V, +12V-20A, +12V-6A)

Required Tools

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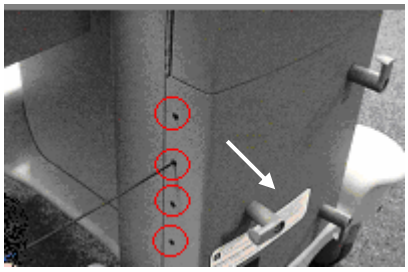
- #2 Philips-head screwdriver
- Flat-blade screwdriver
- 5.5mm nut driver

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Place AC circuit breaker, located at the rear of the SuperCart, in the "OFF" (down) position
3. Disconnect the main AC power cord from the rear of the SuperCart
4. Remove the ten (10) screws securing the power compartment access panel (on the backpack), and remove panel



5. While pressing down (and holding) on the locking tab, unplug the AC power-in Molex connector, at J1 on DC Power Supply (P/S)

IMPORTANT NOTE

The six (6) *DC output voltage wires (+12V, +5V, +12V Monitor) on Power Supply are all the same color (black), but are marked numerically from left-to-right (as viewed), in the order 6, 5, 4, 3, 2, 1. Be sure to install each wire in the correct location when performing this repair.*

6. Using a screwdriver, disconnect all six (6) of the DC power output wires (black) from the J7, J8, and J9 terminals

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7. Remove two (2) nuts securing SSR (Solid State Relay) to studs on casing, and move SSR aside.
8. Remove the four screws mounting the DC Supply to the chassis, and remove old supply from SuperCart
9. Reverse above order for installation of new DC Power Supply (refer to SuperCart Power Distribution Diagram, in Chapter 8 of this manual, to verify proper wire connectivity during installation).

20.4 Hardware Service/Replacement Procedures (*mini*Cart)

20.4.1 Main AC Power Fuse Removal/Replacement (*mini*Cart)

Required Parts

- P/N: 32618-00 .....FUSE, 6.3A, SLO-BLOW, 5mmx20mm (100-120V Systems)
- P/N: 32627-00 .....FUSE, 3.15A, SLO-BLOW, 5mmx20mm (200-240V Systems)

Required Tools/Equipment

- Small, flat-blade screwdriver

Procedure

STEPS:

1. Power off the Scan Engine.

2. Completely disconnect the main AC power cord from the rear of the *mini*Cart, to ensure no AC power is being applied to the **z.one**.

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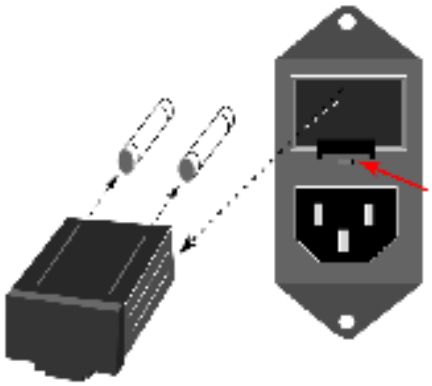
3. The fuse holder is located directly above the connector (at the lower-left, rear of the *mini*Cart) where the main AC power cord plugs into the back of the *mini*Cart.

4. Using a small screwdriver (or the edge of a fingernail, if applicable), lift up on the plastic release tab (shown by the arrow below), in the slot at the bottom-center of the fuse holder's cover plate.



5. Slide the fuse holder assembly out of its receptacle.
6. Remove both fuses from the fuse holder, and inspect.
7. Replace fuses as required, and reverse above steps for re-installation.

Fuse Specifications: - 100-120V Systems: **T6.3A/250V**
- 200-240V Systems: **T3.15A/250V**

20.4.2 Main Power Supply – Removal/Replacement (*mini*Cart)

Required Parts

- P/N: 32621-00 .....Power Supply , 250W, 5V@8A, 12V@6A, 12V@20A, Med. Grade

Required Tools/Equipment

- #2 Philips head screwdriver

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- Flat-blade screwdriver

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Disconnect the main AC power cord from the rear of the *mini*Cart
3. Un-dock the Scan Engine from the *mini*Cart, and set it aside
4. Carefully lower the *mini*Cart over on its back, on a soft surface (carpet, etc) resting the unit on the rear push handle
5. Using a Philips-head screwdriver, remove the four (4) screws (two on each side of the chassis) that retain the power supply cover, to the *mini*Cart chassis

CAUTION

Be sure to support the power supply assembly when removing it, as all of the cables will still be attached.

6. Allow the power supply housing to drop downwards, and rotate it to expose the internal components

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7. Mark the location of all of the wires attached to the terminal strips on the main power supply
8. Disconnect all wires from their attachment points on the terminal strips
9. Pry the power supply from the sticky-grip tape attaching it to the inner surface of the power supply cover, and remove supply from the *mini*Cart
10. Reverse previous steps for installation of the replacement power supply

---

20.4.3 USB Hub Service – Removal/Replacement (*mini*Cart)

Required Parts

- P/N: 32640-00 ..... USB Hub, high speed

Required Tools/Equipment

- 10mm, nut driver
- Flat-blade screwdriver (thin blade)

Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Disconnect the main AC power cord from the rear of the *mini*Cart
3. Remove the four (4) 10mm nuts that secure the USB hub cover to the *mini*Cart chassis

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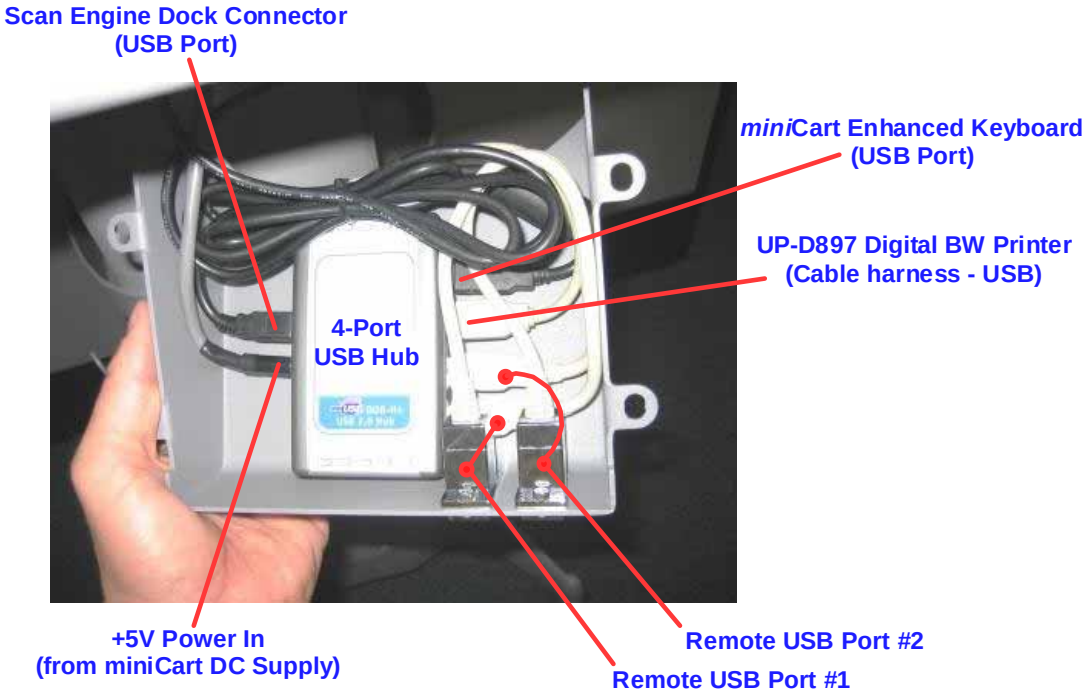
4. To loosen the hub cover from the threaded studs, use a thin tipped, flat-blade screwdriver, to wedge between the cover and the frame of the *mini*Cart

5. Slide the hub cover straight downwards, until it is free from the mounting studs

CAUTION

Be sure to support the hub assembly when removing it, as all of the cables will still be attached.

6. Allow the hub cover to swing downwards, to expose the hub and cables



7. For hub replacement, disconnect the five (5) USB cables and the +5V power cable

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8. Pull the USB Hub from its sticky-strip attachment, to the bottom surface of the cover
9. Reverse previous steps for re-installation

20.4.4 Remote Keyboard Assy - Removal/Replacement (*mini*Cart)

Required Parts

- P/N: 32647-00 ..... Assy, Remote Keyboard (*mini*Cart)

Required Tools/Equipment

- 10mm Nut Driver
- Needle-Nose Pliers
- Flat-blade screwdriver
- Diagonal Cutters or Knife
- Dual Lock Fastener Tape
- Cable Ties

Overview of Procedure

- Removal of USB Hub Cover
- Removal of Remote Keyboard Assembly

Removal of USB Hub Cover:

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Disconnect the main AC power cord from the rear of the *mini*Cart.
3. Remove the four (4) 10mm nuts retaining the USB Cover and drop the cover so that the USB Hub is accessible.

***NOTE**: This may require using a flat-blade screwdriver to initially pry the cover free from the threaded studs.*

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4. Disconnect the USB connector (at the Hub) for the cable leading from the Remote Keyboard to the USB Hub.

5. Slide the keyboard tray out, to gain access to the Remote Keyboard, and then detach it from the Dual-Lock fastener tape that secures it to the top surface of the sliding tray.

***NOTE**: The Dual Lock fastener tape is quite strong, and will require a firm pull to remove the keyboard. Be careful to not damage the keyboard or tray when separating.*

6. Ensure the new keyboard has Dual Lock Fastener Tape in the appropriate area prior to installation.

7. Reverse the procedures for installation of the keyboard and other components removed during this procedure,

***NOTE**: Ensure that you use appropriate cable ties to secure cables in their respective places and firmly secure the new keyboard to the keyboard tray's Dual Lock without damaging the new keyboard.*

20.4.5 LCD Display - Removal/Replacement (*mini*Cart)

Required Parts

- P/N: 32629-00 ..... Assy, LCD Display (*mini*Cart)

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Required Tools/Equipment

- #1 Philips screwdriver
- 2.5mm, Allen / Ball Wrench
- Small flat-blade screwdriver
- Foam Pad (approx 12” x 12”)

Removal of the 13” LCD Barco Display (*mini*Cart):

STEPS:

1. Ensure the **z.one** is powered “OFF”
2. Disconnect the main AC power cord from the rear of the *mini*Cart
3. Remove the #1 Philips screws securing each of the two plastic half-shell cosmetic covers, at the back of the LCD Display.

4. To remove each of the two plastic half-shell covers, place the head of either the flat-blade or Philips screwdriver just into the empty screw hole, and carefully pry upward/outward. This is being done to raise the cover sufficiently for the plastic locking tab (at the outside edge of the cover) to clear the lip on the main display housing. Once each cover is free, remove it from the back of the LCD display.

5. Disconnect the two cables (+12V Power, DVI-Video), at their attachment points on the back of the LCD Display. The DVI cable requires loosening of the two slotted-type retaining screws, prior to cable removal.

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6. Remove the four (4) 2.5mm Allen / hex-head screws that retain the LCD Display to the metal hinge assembly, ensuring to support the LCD Display while removing the last screw.

CAUTION

Be sure to support the display to prevent damage during removal or installation.

***NOTE**: If supporting the LCD Display while removing the screws is difficult, a small box or like object of appropriate height in conjunction with foam padding may be used to support the monitor during removal and installation (as shown below).*

7. Remove the old LCD Display.
8. Acquire the replacement display and hold it in position on the protective pad (aligning the threaded screw holes with the mounting holes in the metal hinge plate).
9. Initially start each of the four (4) mounting screws, and then fully tighten once all screws are in place.
10. Reverse the previous disassembly procedure steps, for completing the installation of the new LCD display.

20.4.6 Casters/*Wheels* - Removal/Replacement (*mini*Cart)

Required Parts

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- P/N: 32737-00 ..... Assy, Caster, Front (w/Brake)
- P/N: 32738-00 ..... Assy, Caster, Rear (w-o/Brake)

Required Tools/Equipment

- 19mm open-end wrench (thin head)
- LocTite 242 (blue) thread locking compound

Removal of the Caster:

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Disconnect the main AC power cord from the rear of the *mini*Cart.
3. Fold the LCD display screen down to a horizontal position, for protection from moving during tilting of *mini*Cart.
4. Ensure the Swivel Lock is in the "Locked" position.
5. Lock the brake mechanism on each front wheel to keep the *mini*Cart from rolling.
6. On a soft surface (carpet, etc.) tilt the Cart backward, until it is horizontal, resting on the rear push handle for support.
7. Using the 19mm wrench, loosen the threaded stud that connects the Caster to the base of the *mini*Cart.

8. Reverse the disassembly procedure, for installing the new Caster.

***NOTE**: Applying LocTite 242 thread locking compound to the threads of the Caster mounting stud is recommended*

9. Tilt the *mini*Cart back up onto its wheels, and release the brake mechanism.
10. Verify smooth operation and pivoting of the Cart during all directional movements.

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20.5 Hardware Service/Replacement Procedures (Scan Engine)

20.5.1 Rear I/O Door Assembly - Removal/Replacement (Scan Engine)

Required Parts

- P/N: 80255-00.....Rear I/O Door Assembly (Zonare)

Required Tools

- ESD protection equipment (wrist grounding strap, anti-static surface)
- #2 Philips-head screwdriver

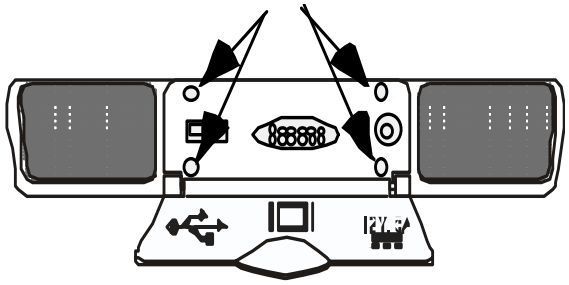
Procedure

STEPS:

1. Ensure the **z.one** is powered "OFF"
2. Remove the Scan Engine from the SuperCart (if currently docked)
3. Lay Scan Engine face-down
4. Remove battery pack from the Scan Engine

CAUTION

- *To prevent potential static shock damage to sensitive electrical components in the Scan Engine, use of all proper ESD (Electro Static Discharge) protection (wearing grounded wrist strap) and avoid direct contact with electronics during replacement of the Rear I/O Access door.*



5. Completely loosen the four (4) Philips-head screws, retaining the door to the Scan Engine
6. Grasping the hinged door, lift the door assembly out of the Scan Engine
7. Reverse above procedure for reinstallation, ensuring that the rubber boot (located inside the doorway) is properly positioned prior to door installation

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20.6 Service Software Procedures

20.6.1 Accessing the "Diagnostics" Menu

The **Diagnostics** menu on the **z.one** offers (or will offer in subsequent software/hardware releases) the following functionality:

BASIC Menu Functions:

- Displays the **z.one** Scan Engine serial number
- Displays the currently installed system software level
- Displays the revision level of major PC boards in the Scan Engine
- Configuration of the IP address, user name, and password for ZONARE support *(future use)*
- Capture System Logs (software status messages) *(future use)*

ADVANCED Menu Functions added: ***(ZONARE trained service personnel ONLY)***

- Bring up a System Console screen
- Configuration of serial port usage (on the SuperCart) for serial debugging *(future use)*

1. Using the **Tab** key**,** advance the selection to the **TOOLS** menu
2. Using the **Menu Control**, scroll down to **SYSTEM SETUP** selection and press the **SELECT** key to open this screen
3. Using the Menu Control, scroll down to **DIAGNOSTICS** selection and press the **SELECT** key to open this screen

For detailed information on use of the "**Diagnostic Panel**" screen, refer to Section ***16.4*** of this manual.

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21 PART NUMBER INFORMATION

21.1 SuperCart

21.1.1 Major FRU Assemblies

Number	Part Number	Description
1	80176-00	**z.one** SuperCart, Top Level - 110VAC version (Zonare)
2	80243	**z.one** SuperCart, Top Level - 220VAC version
3	80215-00	Display, 13” Flatscreen, LCD (Zonare)
4	80221-00	Assy, User Interface, SuperCart (Zonare)
5	80239 -00	Assy, Scanner Pocket, SuperCart (Zonare)
6	80207	Assy, SuperCart Main Board w/IO & Panel
7	31316	Assy, Power Supply (DC), SuperCart
8	80128	Assy, AC Board, SuperCart
9	80208	Assy, Toroid w/Terminals, SuperCart

21.1.2 Discrete PC Boards

Number	Part Number	Description

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1	80127	Assy, Backplane (Interface) Board, SuperCart
2	80136	Assy, Interface Board, Scan Engine Docking

21.1.3 Cables

Number	Part Number	Description
1	80209	Assy, Cable, Monitor VGA-DDC, SuperCart
2	80210	Assy, Cable, Monitor S-Video, SuperCart
3	80211	Assy, Cable, Monitor Composite Video, SuperCart
4	80159	Assy, Cable, Monitor Power, SuperCart
5	80157	Assy, Cable, HSSL, (Pocket to Backplane) SuperCart
6	80151	Assy, Cable, Scan Engine Release, SuperCart
7	80152	Assy, SuperCart-to-UI Ribbon Cable

21.1.4 SuperCart Miscellaneous Items

Number	Part Number	Description
1	80156	Assy, Speakers, SuperCart
2	80203	Assy, Microphone, SuperCart
3	31525	Caster, 5", Directional Lock (Front)
4	31526	Caster, 5", Fixed (Rear)
5	31638	AC Power Cord (120V)
6	31436	Grommet, probe holder, Siamese
7	31437	Grommet, probe holder, single

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8	31366	AC Circuit Breaker, Main, **6A** *(100-120V Systems)*
9	31367	AC Circuit Breaker, Main, **3A** *(200-240V Systems)*
10	31286	AC Power Input Module
11	31452	Power cable hook, short (backpack)
12	31743	Probe cable hook, long (front)
13	80224	Trackball Assy, Complete
14	80186	Handle, Assy, Left
15	80187	Handle, Assy, Right w/Trigger
16	80188	Handle, Assy, Right
17	31312	Light, 250VAC, Green
18	31867	Push Cam (brake lock)
19	80151	Cable, Scanner Release
20	31541	Hinge, Left Torque (Display)
21	31540	Hinge, Right Torque (Display)

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21.2 *mini*Cart

21.2.1 *mini*Cart Major FRU Assemblies

Number	Part Number	Description
1	85002-00	**z.one** *mini*Cart, Top Level - 110VAC version
2	85014-00	**z.one** *mini*Cart, Top Level - 220VAC version
3	32629-00	Display, 13” Flatscreen, LCD (*mini*Cart)
4	32647-00	Keyboard, Custom (*mini*Cart)
5	32621-00	Assy, Main Power Supply
6	32640-00	USB Hub

21.2.2 *mini*Cart Cables

Number	Part Number	Description
1	32612-00	Assy, Cable, USB Gray, 1Meter
2	32613-00	Assy, Cable, USB Bulkhead (USB Remote Ports)
3	32614-00	Assy, Cable, Molded 3-Cable Harness (Scanner Docking)
4	85003-00	Assy, Cable, AC Power (USB Remote Printer)
5	85004-00	Assy, Cable, DC Power (*mini*Cart Display Monitor)
6	85007-00	Assy, Cable, DC Power (USB Hub)

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21.2.3 *mini*Cart Miscellaneous Items

Number	Part Number	Description
1	32737-00	Caster, 5", Locking (Front)
2	32738-00	Caster, 5", Non-Locking (Rear)
3	31638	AC Power Cord, 15’ (North America)
4	31808	AC Power Cord, 4.5M (Continental Europe)
5	32618-00	Fuse, AC Main , Slo-Blo **6.3A** *(100-120V Systems)*
6	32627-00	Fuse, AC Main, Slo-Blo **3.15A** *(200-240V Systems)*
7	32619-00	AC Power Input Module
8	32620-00	AC Power Input Module Fuse Drawer
9	32656-00	Bracket, USB Printer Mounting (*mini*Cart)
10	32682-00	USB to Ethernet Adapter

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21.3 Scan Engine

21.3.1 Major FRU Assemblies & Miscellaneous

Item	Part #	Description
1	82001-00	Assy, Complete, Scan Engine 2.0 (Zonare)
2	80044-00	Battery Pack (Zonare)

21.3.2 Scan Engine Accessories

Item	Part #	Description
1	80056	Battery Charger, 2-Bay - (w/o AC power cable)
2	31638	AC Power Cable (for Battery Charger) 120 VAC
3	31808	AC Power Cable (for Battery Charger) 220 VAC
4	Z316 (Sales #)	AC Power Adapter, 2.0 - (w/110 VAC Power Cable)
5	Z317 (Sales #)	AC Power Adapter, 2.0 - (w/220 VAC Power Cable)
6	50001	Scan Engine Carrying Bag

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21.3.3 Scan Engine Miscellaneous Items

Item	Part #	Description
1	80206	Stylus
2	31232	Feet, Rubber (3 used)
3	80068	Handle
4	31167	Cover, Trackball
5	80255-00	Rear Door Assembly (Zonare)
6	32666-00	256MB, USB Flash Card
7	32667-00	512MB, USB Flash Card
8	32668-00	1GB, USB Flash Card
9	32669-00	2GB, USB Flash Card

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21.4 Transducers

21.4.1 Transducers (Complete Assemblies)

Item	Part # *(Sales) : Service*	Description	
1	(Z101) : 84001	C5-2 - Convex Array	
2	(Z102) : 84003	L10-5 - Linear Array	
3	(Z103) : 84002	EV9-4 – Endo Vaginal	
4	(Z104) : 84005	P4-1 - Phased Array	
5	(Z106) : 84007	L8-3 - Linear Array	
6	(Z105) : 84006	P10-4 - Phased Array	

21.4.2 Transducers Accessories

Item	Part #	Description
1	Z153	Biopsy Kit, 16 gauge
2	Z154	Biopsy Kit, 18 gauge

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3	Z155	Biopsy Kit, 22 gauge

21.5 Peripherals – Kits - Cables

Item	Part #	Description
1	Z402	Kit, SONY UP-897MD Install (Sales P/N) – Hdwe, Cables, Tools
2	Z403	SONY, UP-21MD, Color Printer - Option (Sales P/N)
3	Z404	Panasonic LQ-MD800 Video Rec - Option (Sales P/N)
4	Z405	Kit, DVD, LQ-MD800 Install (Sales P/N) – Hdwe, Cables, Tools
5	Z407	SONY, UP-897MD, B/W Printer – Option (Sales P/N)
6	Z409-00	SONY, UP-D897, USB Printer - Option (Sales P/N)
7	40004	SONY, UP-897MD, B/W Printer (printer only)
8	80248	Kit, SONY UP-897MD Install (Hardware & Cable Assy)
9	80028	Assy, Cable Harness, B/W Printer (video & print cables)
10	40002	SONY, UP-21MD, Color Printer (printer only)
11	80029	Assy, Cable Harness, Color Printer (video & print cables)
12	40003	Panasonic LQ-MD800 Video Recorder (unit only)
13	80005	Kit, DVD, LQ-MD800 Mounting (Hardware & Cables)
14	80028	Assy, Cable Harness, DVD Recorder (audio-video-print cables)

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15	40005-00	SONY, UP-D897, USB Printer (printer only)	
16	31872	AC Power Cord, 3.25 ft, IEC320 Male to IEC320 Female	
17	31873	AC Power Cord, 8.2 ft, IEC320 Male to IEC320 Female	

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